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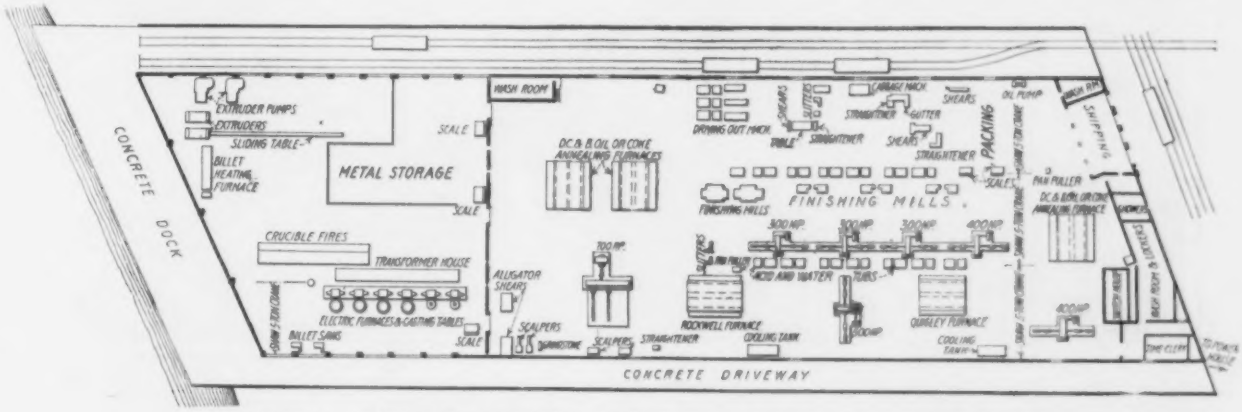
Direct Routing in a Modern Brass Plant

Electricity Used Almost Exclusively for Melting in Detroit Copper and Brass Rolling Mills—Hand Labor Reduced to a Minimum

BY F. L. PRENTISS*

TWO new plant units recently have been placed in operation by the Detroit Copper & Brass Rolling Mills, Detroit, equipped according to the latest developments in processes and practices in the brass melting and manufacturing industry and arranged for economical production by the conservation of manual labor, use of handling equipment, and the direct routing of material in the process of manufacturing. A predominating feature is that electricity is used almost exclusively for the melting of brass. Pouring pits are virtually eliminated, thus economizing in labor. All mills shop through an alcove to the brass manufacturing department. After passing through break-down rolls, annealing furnaces, scalping machines, run-down rolls, other annealing furnaces and a second set of run-down rolls, the material goes through another annealing furnace at the end of the building, at right angles with the length of the building. Therefore the brass or copper charged into the furnace in the first bay is delivered from the opposite end of the annealing furnace into the second or middle bay, where all the finishing operations are performed. Two of the other annealing furnaces are similarly transversely arranged for convenience in routing the material from the finishing rolls to the adjoining bay for the operations that follow rolling.



Brass Melting and Brass Manufacturing Plants Occupy Adjoining Connected Buildings

and other manufacturing equipment are motor-driven.

The plant extensions include a melting shop and brass manufacturing plant occupying adjoining connected buildings with a brick wall between. The casting shop supplies metal for the entire works in the form of flat slabs, known as bars, for the brass department, and billets for rods, seamless tube and wire. Its daily capacity is 180,000 to 200,000 lb. The operations in the plant have shown that a much more uniform mixture is secured by the use of the electric furnaces and that the production costs have been reduced considerably as compared with the use of pit furnaces.

The brass manufacturing department is designed for large production of light, thin gage sheets, about one-half of the product being in 30 gage and lighter down to 0.001 in., and the remainder in heavier than 30 gage. In widths, the sheets are made up to 12 in.

Material has a direct routing from the casting

The sheets pass back down the center bay in the opposite direction from which the material was routed in the first bay, the various rolling operations being performed en route. Then they pass directly over to the third bay for the operations following rolling, provided they are in the heavier gages. The lighter gages are given the necessary passes for further reductions through additional rolls on the opposite side of the center bay before going to the final finishing department.

Each bay is equipped with a 5-ton Shaw electric traveling crane, used for supplying the mills with metal. Trucks carry the metal from the rolls to the annealing furnaces. Similar cranes are provided in the casting shop for charging the furnaces, handling the bars and billets and for other service.

The casting shop is 199 ft. long and the brass manufacturing department, 474 ft. long. Both are

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183 ft. wide, of steel and reinforced concrete, with practically continuous glass sides set in Fenestra steel sash. The casting house has two monitors, the side walls being 32 ft. high and the top being 45 ft. from the floor. The monitor sash are stationary, ventilation being provided through sixty-four 48-in. Swartwout ventilators in two rows, staggered. Continuous rolling steel doors are on each side of the building. Both buildings have wood block floors except in front of the furnaces. The roofs are of gypsum tile.

The casting shop extends over the Detroit River, the building site having been filled in for 150 ft. out to the harbor line, and a concrete dock extends along the water. It is the intention eventually to bring refined copper by boat from the head of the lakes direct to the plant. Two railroad tracks extend along the west side of the two buildings.

The brass manufacturing plant is of sawtooth construction, but differs in design from the usual building of this type. Instead of having equal column spacing in each direction, the distance between columns across the building is 60 ft. and the column spacing lengthwise is 20 ft. In place of the usual steel roof trusses, supported on the girders and columns, this building has sloping I-beam purlins, supported on lateral trusses and cantilevering over the trusses at the top, a distance of 2 ft. 4 in., to bring the sash out far enough from the truss to allow the ventilating sash in the sawtooth roof to swing in the center instead of at the top, as in the usual arrangement. The sash swings 120 deg., affording much better ventilation than a top-hung sash.

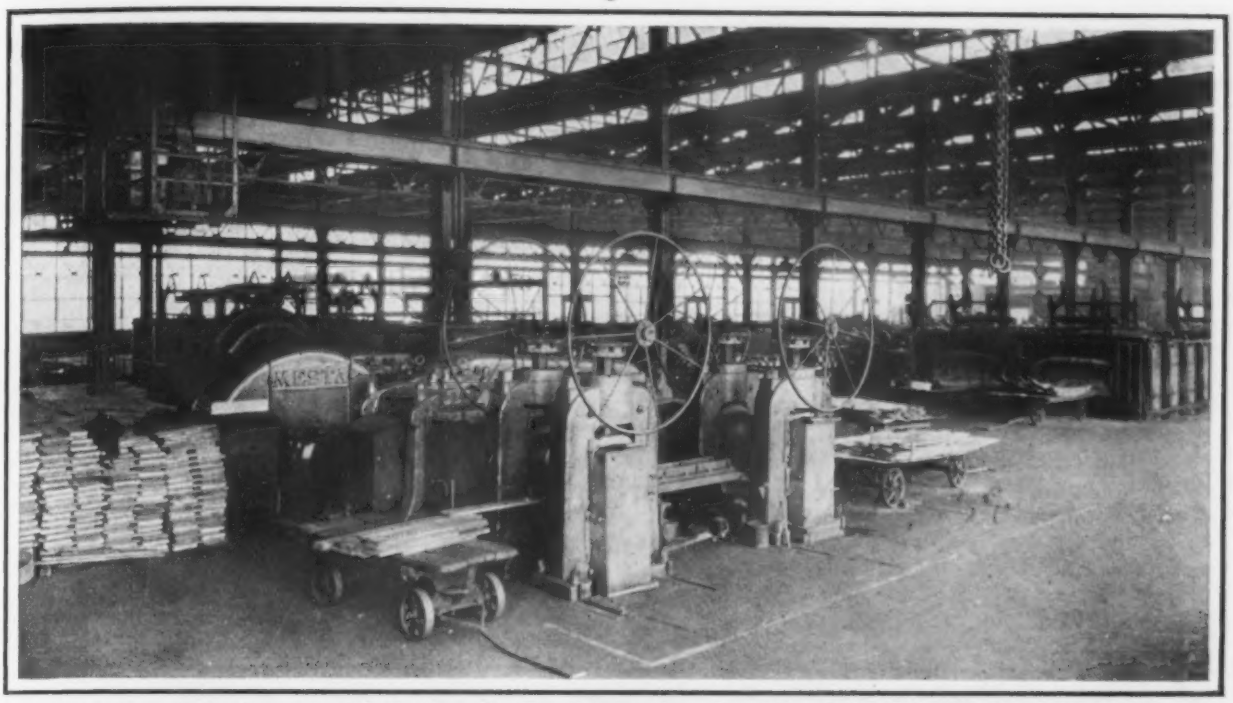
The casting shop is equipped with six 300 kw. melting furnaces of 2000 lb. capacity and two additional furnaces will be installed. One spare furnace drum is provided. The furnaces are of the rocking type, built by the Detroit Electric Furnace Co. They are in a row in the east bay and stand on 3½-ft. pedestals. The furnaces are fed from a charging floor that extends over the furnaces 2 ft. above the furnace tops and about 12 ft. above the floor of the casting shop. Above each furnace is a 14 x 22-in. hole in the charging floor, through which a funnel reaching down into the furnace is placed when charging.

The charge of refined copper, spelter and scrap, and sometimes a little lead, is made up in the stock room in a portion of the two adjoining bays back of the melting furnace. A standard size of charging box is used, holding 2100 lb., the usual charge. This is placed on an electric truck which carries it to the furnace bay after being weighed. An electric traveling crane picks up the charging box and delivers it to the charging floor.

One of the interesting features of the casting shop is a specially designed turntable in front of each furnace on which the flat metal molds for casting brass sheet bars are carried. This turntable is approximately 10 ft. in diameter, and consists of a cast iron base, a section of pipe in the center forming the axis for revolving, and angle iron structural members which support the molds. The molds are of cast iron and consist of two parts hinged together, a stationary part being clamped to the frame of the turntable and the front part swinging on hinges. Before pouring, the two sections of the molds are clamped together at the top, bottom and center by three bands and wedges, the wedges being driven between the bands and the front of the molds, holding the two parts together firmly. Then a pouring box is placed over the top of the mold. The turntable revolves on ball bearings that support a sub-base 40 in. in diameter in which the turntable rests. The turntable is held in position by a cone cast to the sub-base into which the pipe axis of the turntable fits. At the top of this pipe is a hook for handling the turntable with the crane.

Turntables are provided in different heights to hold molds of different sizes, and little time is required in changing the table, should it be desired to pour molds of a different size. There is a mold capacity on the turntable for 2500 lb., but usually 20 molds are used for flat metal, these being sufficient for pouring one heat. The metal is poured directly from the furnace spout into a mold and then the turntable is moved until the next mold comes in line with the pouring spout. The turntable revolves so easily on the ball bearings that

Brass Is Melted in Electric Furnaces of the Oscillating Type and Poured Directly into Molds Set on Turntables. A standard sub-base is provided so that another table can be substituted if a change in the size of molds is required. A charging platform extends over the furnaces, the charging boxes being deposited on this platform by means of a traveling crane



The Break-down Rolls Are Arranged Tandem, the Bar Passing from One Side of the Rolls into the Second Rolls. The tandem rolls save considerable labor in handling the bars

one man can turn it. Turntables of similar design are used for handling billet molds, but as these are much larger, one turntable carries only three billet molds. The billets used for making rods and wire are cast 6 in. in diameter in 72 in. lengths, weighing approximately 750 lb. However, brass billets weighing as much as 5000 lb. have been cast in the plant. The billets are sawed into three 24-in. sections. A Newton cold saw cuts the billets and removes the gates.

In the center bay are 32 coke-fired, pit type, crucible furnaces, consisting of four floors with 8 furnaces to a floor. Adjoining these is a concrete pit for pouring the molds. The pit furnaces are used only as spare equipment for melting small quantities or special heats. Jib cranes handle the crucibles while pouring.

At the lower end of the center bay is a Marcy mill and three Wilfley tables for recovering brass and copper from the ashes of the pit furnaces and from the sweepings around the mills. These sweepings are dumped into a pit from which an elevator raises them to the mill. In this, the material is rotated in a barrel containing steel balls and crushed, separating the metal and ash. A stream of water washes the small pieces out through openings in the barrel to an oscillating separating, or washing table, over which water flows. The metal moves lengthwise over the table and is deposited in a trough, and the lighter matter, known as tailings, passes over one side of the table.

The scrap, or washings, from the table is passed through a magnetic separator and then sent back to the electric furnaces for re-melting. The fine material, or tailings, separated in the washing process, is sold to smelters. The reclaiming equipment was

For Removing Scale and the Rough Surface of Bars Up to 10½ In. Wide, Specially Designed Milling Machines Are Used. Two of these machines are shown at the right, and a straightening machine at the left

put in particularly for use with the pit furnaces, but with the departure from the original plan which has resulted in the almost exclusive use of the electric instead of pit furnaces, it is expected that there will not be much need for the mill and washing equipment. Experiments are now being conducted on the recovery of copper from the scale by the electrolytic process, which will be continued if it is found profitable.

The extrusion process will be used in the manufacture of rods from billets and two extrusion presses are now being installed in the cast shop. These are 2000-ton presses, built by the Southwark Foundry & Machine Co.

The brass manufacturing plant is equipped with 24 stands of rolls, located along the inner side of the east bay and on each side of the center bay, those in the center bay being finishing rolls. The first set is a tandem pair of 22-in. break-down rolls. The bar passes from the first set of rolls on to a guide and the roller pushes it along on the guide into the second set. Tandem rolls eliminate one trucking operation and the labor of two men is saved, as compared with the use of two separate single stands. Only four men are required to handle the bars through the tandem stands.

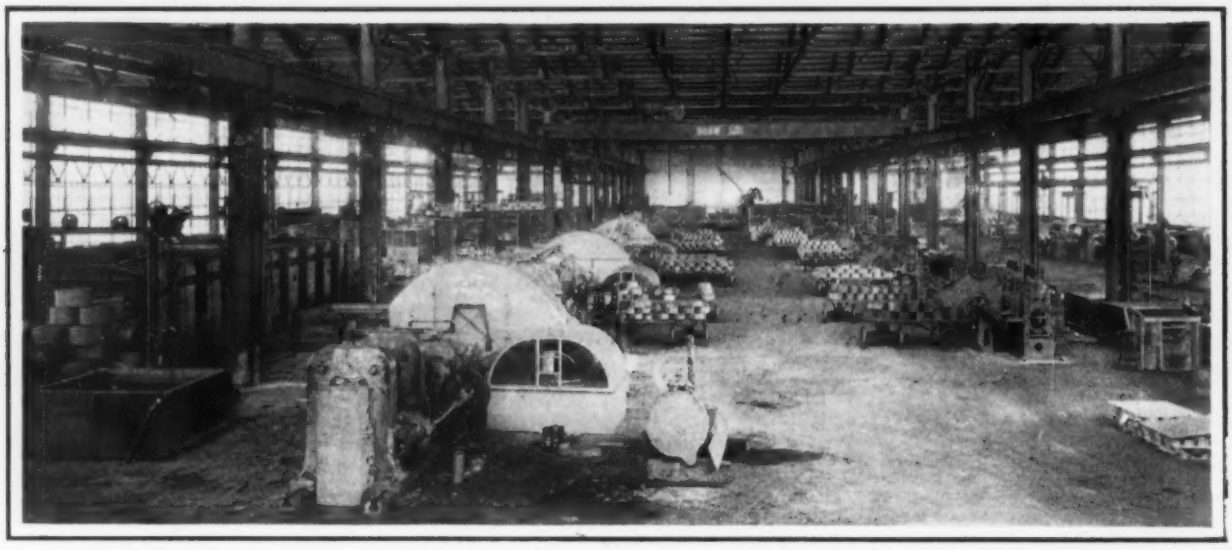
The bars, on entering the brass rolling department from the casting shop through an alcove, go to two motor-driven alligator shears where the gates are cut off and additional metal is removed, should the ends of the bars not be solid metal, and then go to the break-down rolls, each set reducing the thickness of the bars approximately 25 per cent.

After the two passes in the break-down rolls the bars are annealed in double-end annealing furnaces. There are 10 of these furnaces set in pairs, of the same size and generally similar in construction. They are of the under-fired type with chambers, 7 x 28 ft. The furnaces are oil-fired but they are so arranged that coal or coke can be substituted. The metal is charged into the annealing furnaces on long steel plates, or pans, placed on trucks that bring the pans to a level with the furnace floor. The pans are coupled and are pulled through the furnace with a winch, one charge being drawn in while the other is drawn out. The furnaces are Quigley and Rockwell makes and some designed in the plant.

After the first annealing the bars go to the opposite side of the bay where they are straightened on a five-roll straightening machine. Then the scale and rough surface are removed. Scalping machines, built by the Waterbury-Farrel Foundry & Machine Co., are used for the widest bars, but for widths up to 10½ in. a milling machine, built by the Torrington Co., is employed for scalping. This machine has a cutter 12 in. wide, similar to a milling cutter, and a capacity of milling both sides of 600 to 800 bars per day. After scalping, the bar is given another pass through each of the tandem break-down rolls, and on leaving the second set of rolls is coiled on a coiler attached to the mill stand.

All of the larger rolling units, after the break-down rolls, consist of two sets of rolls with a single drive. After the second pass through the break-down rolls, the next rolling operation is through 20-in. run-out rolls, and from there to another pair of annealing furnaces. Much of the metal is pickled after annealing by placing the brass on a truck and putting the truck and its load in a large pickling tank with an overhead crane.

After the 20-in. run-out rolls, the bar passes through a set of 18-in. run-out rolls. There are two sets of 18-in. rolls, one a finishing set having rolls 30 in. in width. The finishing rolls include six 16-in. rolls, arranged in pairs, and 10 smaller sets, six with 9-in. rolls and four with 10-in. rolls, both 16 in. in width. A separate drive is provided for each of the smaller finishing rolls.



The Finishing Mill Department in the Center Bay Has 18 Stands of Rolls, All Parallel. One of the annealing furnaces appears at the left

All of the rolls except the break-down rolls and the first run-out set are located in a line parallel to the length of the building. Unless sheets are to be rolled in very light gages the material, after passing through the larger finishing mills on the east side of the center bay, goes directly across to the west bay for the finishing operations that follow rolling. Some of the finishing rolls are so arranged that, if it is desired, the metal is given a pass through one set of rolls and back through the rolls of the adjoining mill that are running in the opposite direction. The mills were built by the Mesta Machine Co., Waterbury-Farrel Foundry & Machine Co., and the A. Garrison Foundry Co.

An interesting feature of the mill equipment is that the coilers are so designed that the motor that drives the coiler is attached to the bottom of the coiler table, and swings with the coiler to which it is directly geared, thus eliminating all belting. The motors for the coilers have push-button controls.

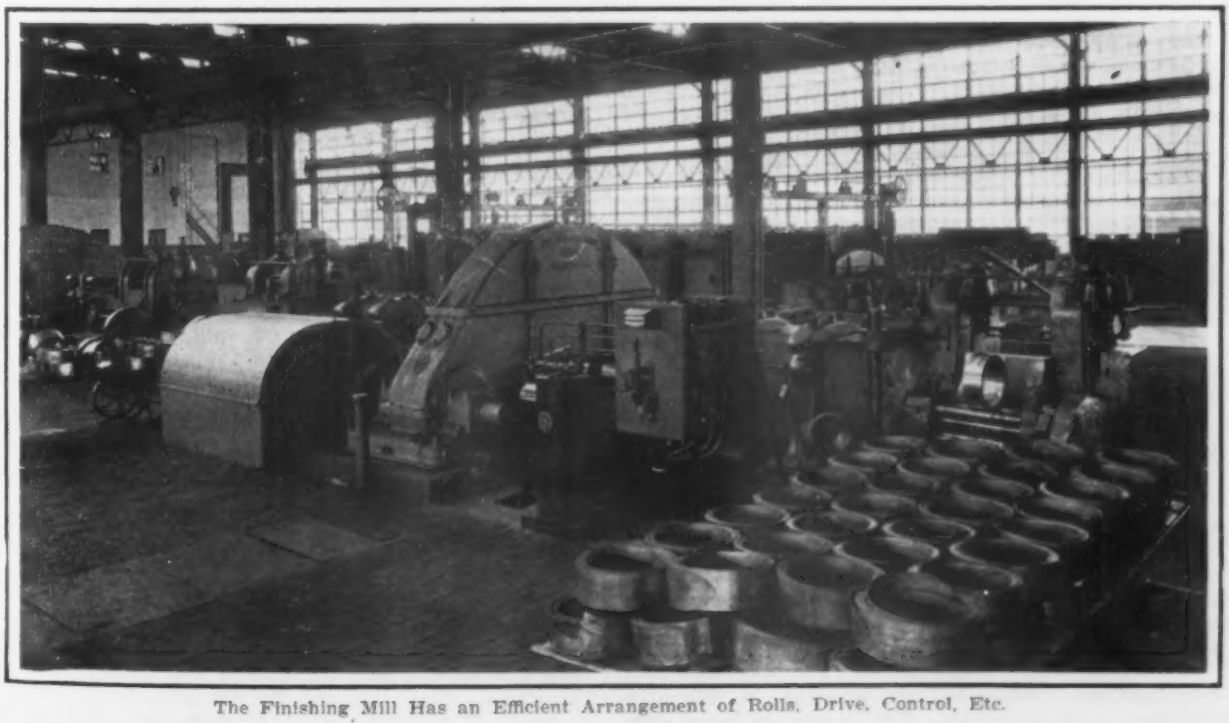
In the west bay are drying-out, shearing, slitting and straightening machines, and the packing and shipping department.

The Motor That Drives the Coiler Is Attached to the Bottom of the Coiler Table, with Which It Swings. Electric hoists run on the lower flange of the crane runway and serve pickling tables between the bays

Both rolls of the tandem break-down mill have an 800 hp. herringbone type of drive, furnished by the Mesta Machine Co. The speed of the first break-down roll is 19 r.p.m. and that of the second break-down roll 24 r.p.m. The drive is from a 750 hp. Allis-Chalmers motor. The other mills have the Falk drive and General Electric phase-wound induction motors. The 20-in. run-out mill is driven by a 500 hp. motor with a speed reduction from 435 to 29 r.p.m. The 18-in. run-out rolls are driven by a 400 hp. motor with a speed reduction from 450 to 39 r.p.m. The 18-in. finishing mill, with rolls 30 in. wide, is driven by a 400 hp. motor with a speed reduction from 450 to 39 r.p.m. For driving the six sets of 16-in. finishing rolls there are three 300 hp. motors with a speed reduction from 600 to 48 r.p.m. The smaller 9-in. and 10-in. finishing rolls have double reduction drives and are driven by 50 and 75 hp. motors at a speed reduction of from 1200 to approximately 75 r.p.m.

Electric current is received from a commercial station at 4600 volts and is stepped down to 440 volts for the rolling mill equipment, and to 110 volts for the electric furnaces. For emergency purposes current is also supplied at 440 volts from the power station. For the melting furnaces the current is stepped down at each furnace. A brick transformer house extends along the back of the melting furnaces. The mill motors up to 500 hp. are handled with relatively small drum control with only one lever. The controller rooms will be totally inclosed with a drum controller located in alcoves, connected to these rooms.

Uniform artificial illumination is provided in the brass manufacturing department with 500 watt Mazda lamps furnishing an intensity of 5 or 6 ft.



The Finishing Mill Has an Efficient Arrangement of Rolls, Drive, Control, Etc.

candles at the working plane. Most of the pickling tanks are between the columns and convenient to the adjoining finishing roll, a tank serving each set of rolls. Each of these tanks is served by an electric hoist that has as its runway the lower flange of the traveling crane runway, making a convenient and economical arrangement. Oil is stored in a 100,000-gallon concrete oil-proof tank located in the basement, from which it is pumped underground to the furnaces.

Well equipped physical and chemical laboratories and physical testing rooms are on the second floor at the front of the building. The physical testing room has equipment for testing temper, hardness and tensile strength. A sample of every heat when poured is taken for the laboratory.

A labor-saving method has been adopted for the delivery of sheet brass to Detroit consumers. The coils of brass are placed in a shipping box 3 ft. wide, 5 ft. long and 12 in. deep, having a capacity of 3600 lb. This is constructed of wood, with corners bound with angles and with steel straps and lugs at each end for handling with a crane. The material is delivered in the box and the empty boxes are brought back when the next delivery is made to the same plant.

The Detroit Copper & Brass Rolling Mills established a small plant in 1881 which has been extended from time to time and is one of the largest plants in this industry. Its products include brass and copper sheets and rods, seamless and brazed tubes and copper wire and various bronze products. It is stated that the plant is equipped to roll larger brass plates than are made in any other American plant and that during the war 80 per cent of the condensor plates for the Navy and Emergency Fleet Corporation were produced in these works. The plant has made brass plates up to 11 ft. 6 in. in diameter and 1 in. in thickness.

The new casting shop and brass manufacturing plant were designed by Smith, Hinchman & Grylls, engineers, Detroit.

POWER IN SUPERPOWER ZONE

Census Bureau Summary of Industrial Power and Fuel Consumption

WASHINGTON, July 9.—Power equipment and fuel consumption of plants in the superpower zone are shown by a statement prepared by the Census Bureau, in collaboration with the Superpower Survey of the United States Geological Survey. The superpower project contemplates the development of available water powers to supplement and equalize the power requirements of public service, manufacturing and other enterprises, and effect economies in fuel consumption.

The superpower zone embraces the North Atlantic area from Maryland to New Hampshire and includes all of Connecticut, Massachusetts, Rhode Island, New Jersey, and the District of Columbia; the southern portions of New Hampshire and Vermont, Kent and New Castle counties in Delaware; the central counties in Maryland; the eastern portion of Pennsylvania and the southeastern portion of New York.

Power and fuel statistics for the manufacturing establishments and mines and quarries in this area are given in the statement. The figures are based upon returns from 95,984 establishments. Of these 76,227, or 79.4 per cent, used power, the same including 73 694 manufacturers, 1563 laundries, 939 mines and quarries and 31 governmental institutions. The net total is 9,069,471 hp. of rated power equipment, primary and purchased, of which 5,336,627 hp., or 58.8 per cent, is represented as utilized, by electric motor equipment.

	Establishments Using Power	Horsepower Used, 1919 — Total	Prime Movers	Purchased Energy	Fuel Used, 1919 — Anthracite*	Coke and Bituminous†
Total	76,227	9,069,471	6,247,002	2,822,469	20,909,865	§40,330,352
Iron and steel	6,362	1,745,755	1,175,504	570,251	1,311,943	10,224,543
Metals, non-ferrous	3,423	405,249	245,774	159,475	883,861	1,545,733
Railroad repair shops	316	119,906	68,549	51,357	435,866	835,468
Vehicles	3,862	95,380	28,222	67,158	107,669	238,864
Mines and quarries	939	1,010,757	857,273	153,484	8,598,467	266,118
Above five classes	14,902	3,377,047	2,375,322	1,001,725	11,337,806	13,110,726
Per cent of total	19.5	37.2	38.0	35.5	54.2	32.5

*Tons of 2240 lb. †Tons of 2000 lb. §34,669,324 tons of bituminous coal and 5,661,028 tons of coke.

Power equipment	Units	Horsepower	Average Power
Aggregate	....	9,069,471	...
Prime movers	....	6,247,002	...
Steam engines	33,379	4,255,868	127.5
Steam turbines	2,115	1,171,061	553.7
Internal combustion engines	6,246	279,040	44.7
Water wheels	4,708	541,033	114.9
Operated by purchased energy	....	2,822,469	...
Electric motors	361,961	2,770,715	7.66
Other (mainly shaft power and compressed air)	....	51,754	...
Electric motors, total	560,907	5,336,627	9.53
Run by current generated in establishment	198,946	2,565,912	12.90
Run by purchased current	361,961	2,770,715	7.66

Canadian Steel Industry

TORONTO, ONT., July 9.—Stopping in Toronto for a day or two on his way to New York, Roy M. Wolvin, president British Empire Steel Corporation, Montreal, in an interview outlined the various promising features in the outlook of the Canadian steel industry. "The strongest hope for betterment," he said, "rests on the prospect of a revival in the domestic trade of Canada. A bumper grain crop, which now appears a probability, will add greatly to the purchasing power of the whole Dominion. If, in addition to this, the national railway situation improves so that the railways, our biggest consumers of steel, are in a financial position to undertake the work of replacements and extensions which are so sorely needed, the demand for steel products will increase substantially . . . " As to the British Empire Steel Corporation, Mr. Wolvin said that it had now seen its worst quarter, that of the first three months of this year, and that there had been a steady improvement since.

"Coal production costs are being reduced to some extent, owing to the greater efficiency of labor, and the benefit which is being derived from expenditures made last year on power plants and other improvements. The same applies generally to the steel plants. The Dominion Steel plants are to-day running about 70 per cent of last year's operations at this time."

While in England lately Mr. Wolvin was impressed by the seriousness of the financial situation there. The last week or two, however, had witnessed a number of favorable developments, including the termination of the strike. Still, England did not promise to become a buyer of Canadian steel products for some time.

LOCKERS IN STEEL PLANT

Clothes Airing and Locking Device of Youngstown Wire & Iron Co.

A sanitary and space saving locker system has been installed by the Youngstown Wire & Iron Co., Youngstown, Ohio, which consists of individual garment hangers, provided with locks, forming in effect an open locker for each workman.

The system provides a lock-controlled clothes hanger for each individual on which the clothes are suspended under the ceiling, where they are aired and dried. The garments and toilet articles are held in security and are still easily accessible to the holder of the key. The system is arranged in a large room so that a maximum number of men are accommodated with individual safe storage of their clothing, together with toilet and bathing facilities, leaving the larger part of the space, however, available for gymnasium drills or other purposes.

The unit hanger consists of a pan for storing soap, comb and brush, to which are attached four hooks on which the garments are suspended. The detail of the arrangement may be seen from the illustrations. Each of the hangers is suspended from a small chain, which passes over a pulley depending from the ceiling, then passing over a guide pulley, also attached to the ceiling in a position approximately over the rack to which the chain is fastened and locked.

The pulleys are provided with chain guides to prevent the chains from slipping out of the grooves. They are suitably spaced to permit circulation of air and are fastened partly to ceiling beams and partly to tubes running longitudinally under the ceiling.

One of the illustrations shows the location of racks at the plant of the Youngstown Wire & Iron Co., allowing use of almost the entire floor space, with ample provision for bathing, washing and dressing. The locking racks are formed of vertical tubes, fastened by means of a strap bar, resting upon horizontal angle bars and supported by tubular end posts and columns of the building. The upper part of the tube is open and provides for locking of the chain by means of padlock and ring. The chain is long enough to allow the hanger to be lowered to within easy reaching distance and when pulled up to the ceiling, the excess chain is neatly and compactly stowed in the tube.

When a workman arrives at the plant in the morning, he unlocks the particular chain assigned to him, lowers it, takes off his street clothes and puts on shop clothing. He then pulls the hanger up to ceiling, and locks the chain in the rack. In the evening he reverses the process. The janitor carries a master key, in case of loss of an employee's key.

Installation of the Locker System in Plant Shows Racks in Foreground and Background, Also Showers and Wash Basins, and Illustrates Space Saving

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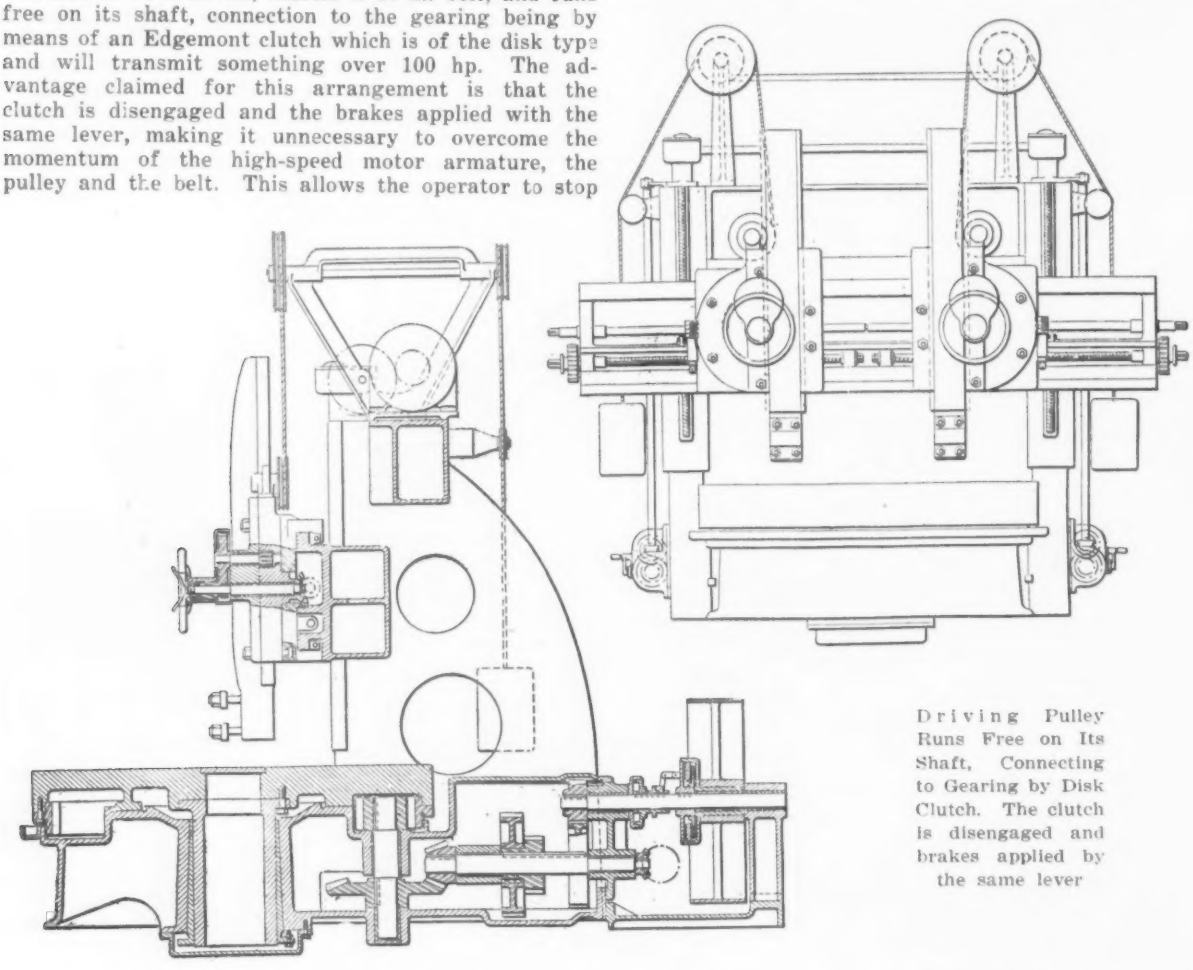
The Pennsylvania Coal & Coke Corporation, operating 34 bituminous mines in the Central Pennsylvania field, announced July 5 that it has made a complete revision and reduction in all salaries, averaging about 20 per cent. The reduction, the officials state, applies to all officers, superintendents, foremen, monthly men, clerks, and stenographers, all operating departments and the general office in New York are affected. A statement by officials says that only nine of the 34 mines are operating owing to the impossibility of meeting competition in other fields operating on the 1917 scale of wages. The nine mines operating are working only from one to four days a week.

Railroad Boring Mill

To meet the requirements of locomotive building and railroad shops in performing turning and boring operations on engine wheels, the Colburn Machine Tool Co., Cleveland, and the Dale Machinery Co., New York and Chicago, co-operated in the development of a 90-in. machine, front and side views of which are shown in the accompanying line drawings. The first six machines were built on order for the American Locomotive Co., whose standard specifications for a heavy duty wheel boring and turning mill of the movable cross-rail type were adopted as a general guide for the designers.

In design the established practice in the construction of boring mills of the movable cross-rail type is followed. The following details, however, may be emphasized: Power is delivered to a single pulley from a 42½-hp. 3 to 1 variable speed motor which runs on 220-volt, direct current. The driving pulley on the machine is 44 x 12 in., carries a 10-in. belt, and runs free on its shaft, connection to the gearing being by means of an Edgemont clutch which is of the disk type and will transmit something over 100 hp. The advantage claimed for this arrangement is that the clutch is disengaged and the brakes applied with the same lever, making it unnecessary to overcome the momentum of the high-speed motor armature, the pulley and the belt. This allows the operator to stop the table instantly or to move it around slightly when setting tools or work.



Driving Pulley Runs Free on Its Shaft, Connecting to Gearing by Disk Clutch. The clutch is disengaged and brakes applied by the same lever

From the driving pulley power is transmitted through gears which are inclosed in the bed of the machine and run in oil. Feed lubricators are used to deliver oil to the spindle drive gears and feed change-gears. All gears are of steel with cut teeth and heat treated, so that they possess ample strength and durability, and in this connection it is of interest to know that the full back gear ratio is 104 to 1 with a maximum gear speed of only 1064 ft. per min. The table is driven by a pinion meshing with an internal gear.

The machine is said to have demonstrated its capacity for taking a maximum feed of ½ by ⅛ in. in steel, with a cutting speed of 60 ft. per min. The bed is of box form, reinforced with ribs and flanges. A cast-steel trough surrounds the bed to provide for catching cutting compound as it drips from the table. Large fitted bolts connect the bed and housings, which are also of box form and reinforced with ribs and flanges. The spindle is mounted on the table and has a suitable tapered bushing in the bed, which is provided with means of adjustment to compensate for wear. A powerful built-in independent 4-jaw chuck is provided on the table, and in common with other gears in the drive, the table gear and pinion run in oil.

A 5-hp. independent motor is provided for elevating and lowering the cross-rail, which is equipped with two independent saddles that are made right and left hand to adapt them for working close together. Either saddle may be moved to the center of the table for use in the performance of boring operations. All wear between the cross-rail and saddles, except on the face of the cross-rail, may be taken up with gibs made of cast-iron. The cross-rail is of the narrow guide type. It is made of cast-iron and the saddles of steel. The rams are of steel with cut rack teeth, and both swivels have adjustment up to 30 deg. on each side of the vertical position. Swiveling is accomplished by a worm and ratchet adjustment. Rapid hand movement is provided for the rams, and they are equipped with counterbalances that are arranged to exert a direct pull on the rams in any angular position. Feeds are reversible, changes of feed being accomplished by sliding gears and clutches.

Among the important dimensions may be mentioned: Maximum swing, 91½ in.; maximum distance between table and cross-rail, 46 in.; spindle travel, 42 in.; diameter of table, 87 in.; diameter of track, 52 in.; width of track, 6 in.; diameter of spindle, 18 in.; length of spindle in bearing, 28 in.; table-speed with back gears in 1½ to 4½ r.p.m.; table-speed with back gears out, 6 to 18 r.p.m.; number of available table speeds, 32; minimum vertical feed, 1⅛ in.; minimum horizontal feed, 0.022 in.; maximum horizontal feed, 0.672 in.; number of available vertical and horizontal reversible feeds, 8. The approximate weight of the machine, including the motor, is 67,000 lb.

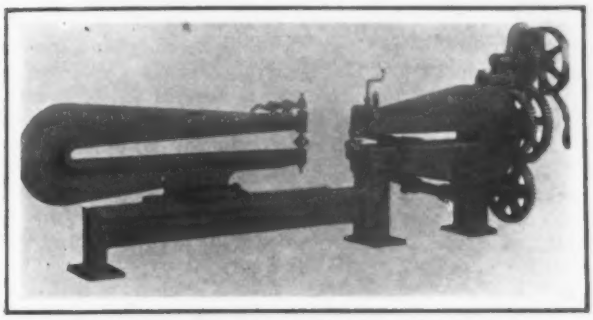
After a two-months' layoff, about 1200 machinists and helpers returned to work this week in the shops at Meadville, Pa., Kent, Cleveland and Galion, operated under jurisdiction of the Ohio region of the Erie railroad.

Ring and Circle Shear

A deep-throat ring and circle shear, designated as the No. 13-B, for light material, has been placed upon the market by the Niagara Machine & Tool Works, Buffalo, N. Y.

The machine is shown in the accompanying illustration and is regularly furnished for bench use, although high legs can be furnished if desired. Owing to the inclined position of the lower shaft and cutter internal circles or holes as well as outside circles can be cut. It is also suitable for cutting reverse curves within certain limits.

Cutters are 1⅝ in. in diameter, of tool steel, ground and hardened, and adjustment is provided for taking



Upper Cutter Can Be Raised and Lowered to Penetrate the Stock. This enables the cut to be started in the sheet, not only on the edge

up wear and for thickness of material to be cut. The upper cutter can be raised and lowered to penetrate the stock so that the cut can be started in the sheet, and not only on the edge. The slitting gage applied to the cutting head is accurate and readily adjustable for strips of various widths. The circle arm can be conveniently moved and fastened to proper distance from the cutters, according to the diameter to be cut. A scale graduated in 1/16 in. is marked on the circle arm support, and the proper position of the blank between the clamping disks is determined by a swinging gage and the cutters. An eccentric device is used for clamping. The clutch is actuated by a hand lever, permitting stopping the motion quickly at any point.

The machine will cut No. 20 gage soft steel and will circle from a square blank 3½ to 42 in. The distance from throat of cutting head to frame is 18 in. and to the gage, 9 in. The throat of circle arm is 30 in. The weight is 430 lb.

More Readjustment Necessary

WASHINGTON, July 12.—Mid-year statistical study of financial conditions has convinced the Federal Reserve Board "there are many factors which seem to make it sure that still further work in the direction of readjustment must be accomplished before even approximate stability can be arrived at. "Encouragement is found in the statement that the board believes that the facts now available indicate that the main elements in business and the industrial recession have made their effects manifest, and that there have been in the majority of lines fairly extensive realinements of relationships. It believes the spring months of 1921 were a period of approach to equilibrium in certain lines of business and of preparation for recovery from the depressed conditions that have developed.

"The board stated that the year 1920-21 has been a period of reorganization." This reorganization, with its effects, has, like all other great business changes, been directly reflected in our banking position and the corresponding position of banking systems the world over."

As to financial and economic tendencies of the readjustment period, the board stated that on the banking side, the characteristics have been "reduction of loans and bills held, retirement of note circulation, gain in gold, and liquidation of investments; while on the business side they have been lowering of production, growth of unemployment, falling off of foreign trade and reaction of prices."

Rolling Mill Leased

The newly erected rolling mill of the Capital City Iron & Steel Co., Harrisburg, Pa., has been leased to Joseph K. White and A. Leigh Ensinger, who will operate it as the Harrisburg Bar Mill Co.

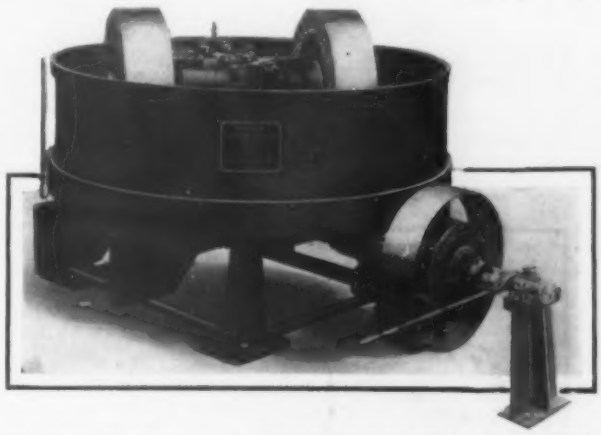
There are at present 9 and 12-in. Belgian mills in operation and a 16-in. mill is under way. The heating furnaces will be operated with oil for fuel and the power equipment is all electrical. The product will be rerolled iron and steel bars in all commercial shapes and sizes.

The purchases and sales will be in charge of Mr. White, who was formerly general sales agent of the Harrisburg Pipe & Pipe Bending Co. and retired at the time that the former owners withdrew. The operation of the plant will be in charge of Mr. Ensinger, also formerly connected with Harrisburg Pipe & Pipe Bending Co., lastly as chief engineer.

New Size Simpson Sand Mixer

The National Engineering Co., Chicago, is adding to its line of Simpson sand mixers a No. 3 size, with an 8 ft. diameter pan. The new machine is said to have been developed particularly for steel foundry purposes, although conveniently used where large capacities are required in gray-iron, malleable, brass and aluminum foundries.

The mixer will hold an average charge of 20 cu. ft., which, figuring 100 lb. of sand to the cubic foot, gives a capacity of 2000 lb. or 1 ton of sand. Smaller or larger batches may be mixed, depending on the particular mixture and the conditions of operation. The drive is from line shaft, or from counter shaft by an individual motor or by direct-connected gearing to a motor. The power in all cases is 25 hp. excepting where a bucket loader is attached, in which case 30 hp. is necessary.



The Cross Head Runs on a Ball Thrust Bearing. All bushings are removable

The parts subject to wear are of cast steel and the crosshead runs on a ball thrust bearing. The vertical shaft bushings are of bronze. All bushings are removable.

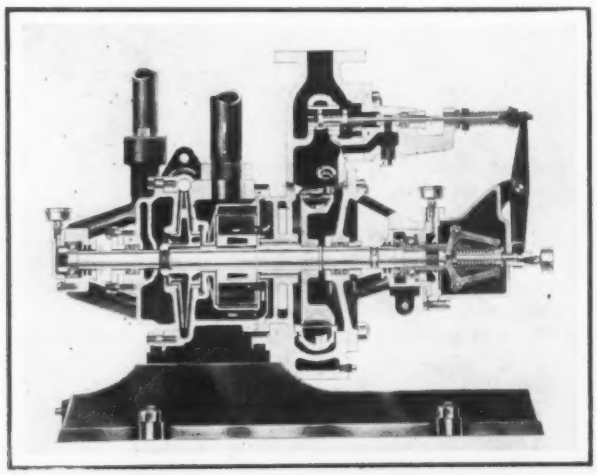
The microchanges which occur during the tempering of hardened steels is now under investigation by the Bureau of Standards, Washington, through its metallurgical division. It is necessary to take hardness measurements and make microscopic examination of all the specimens of each type of steel for each tempering treatment. Over 800 specimens are involved in the investigation and the time necessary for the mere polishing for examination is of course considerable.

Complaint has been filed with the Interstate Commerce Commission by the Brier Hill Steel Co., Youngstown Sheet & Tube Co. and Republic Iron & Steel Co. against the freight rates on limestone from quarries at Hillsville, Pa., to the companies' plants at Youngstown, Ohio. The complaint cites that the rate is discriminatory and unfair, not only to Youngstown, but to all iron and steel producers in the Mahoning and Shenango Valleys.

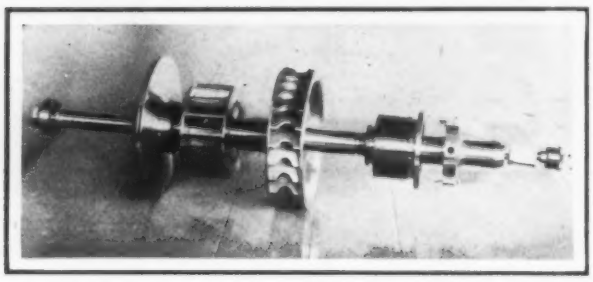
Turbine Driven Return Line Heating Pump

The Nash Engineering Co., South Norwalk, Conn., is placing on the market the Jennings steam turbine driven return line heating pump, a cross section view of which is shown in the accompanying illustration. This unit is designed for use with heating or drying systems where the pump is called upon to maintain both a vacuum on the heating system and to return the hot water and condensation against pressure.

The unit consists of two independent turbine pumps built in one casing; one pump handling the air, the other the condensation, the air and condensation being separated in a receiver under vacuum before entering the unit. This arrangement makes possible a saving in power, because the condensation, which is only one-eighth of the volume handled, is alone delivered against



Two Independent Turbine Pumps Are Built in One Casing. One pump handles air, the other condensation, the air and condensation being separated in a receiver under vacuum



The Three Rotors Are Mounted on One Shaft

discharge pressure, the air being delivered to the atmosphere.

The air end is a development of the Hytor vacuum pump in which the rotor, the only moving part, revolves in an elliptical casing filled with water. The water turns with the rotor, but follows the casing, due to centrifugal force. The water end of the machine is a centrifugal pump with an enclosed type impeller designed to give high efficiency when handling hot water. It unloads when not handling condensation, and is said to require little increased power when delivering against low heads. Provision has been made to vent the centrifugal inlet back to the receiving tank, which is under vacuum, to eliminate air binding.

All interior parts of the pump are of bronze excepting the steam turbine rotor. No lubricant is required in the interior of the pump and no oil or grease can be introduced by the pump into the condensate. The shaft upon which the impeller, rotor and steam turbine wheel are mounted is supported by annular ball bearings mounted outside of the casing, in an adjustable housing. The steam turbine rotating element consists of a solid steel forging with blades milled out of the rim. A centrifugal throttling governor is furnished to maintain a constant steam turbine speed, automatically shutting off steam if the steam pressure rises or if the pump unloads when not handling condensation, preventing increase in speed.

The turbines are designed to operate at 75 lb. steam pressure, although the turbine casing is suitable for pressures up to 200 lb. If it is desirable to operate at pressures lower than 75 lb., a satisfactory operation can be secured on pressures as low as 40 lb. The pumps are furnished in sizes up to 300,000 sq. ft., of equivalent direct radiation.

Fluorspar in 1920

The total quantity of fluorspar reported as shipped from domestic mines in 1920, according to figures compiled by Hubert W. Davis of the United States Geological Survey was 186,778 net tons, valued at $4,718,547, which shows an increase of 35 per cent in quantity and 34 per cent in value as compared with the figures for 1919. The general average price per ton f.o.b. mines or shipping points for all grades of spar in 1920 was $25.26; in 1919 it was $25.49.

The imports of flurospar into the United States in 1920 were 24,612 short tons, valued at $265,630, an increase over 1919 of 254 per cent in quantity and of 147 per cent in value. The exports of fluorspar from the United States in 1920 amounted to 2764 short tons, valued at $65,475. All the fluorspar exported was sent to Canada.

The imports of fluorspar during the first four months of 1921, the greater part of which was brought from Canada, amounted to 4049 short tons, valued at $39,990.

Figures furnished by steel manufacturers who produce about 75 per cent of the output of basic open-hearth steel show that the steel industry consumed about 117,000 short tons of fluorspar in 1920 and that the stocks on hand Jan. 1, 1921, at all steel plants were about 66,600 short tons. From Jan. 1 to April 30, 1921, about 22,600 tons was consumed by basic open-hearth steel plants. Figures showing the shipments of domestic fluorspar to steel plants during this four-month period are not available, but the total was evidently small, and of the 4000 tons imported practically all has been taken by steel manufacturers.

Statistics of shipments of fluorspar by States, by grades, and by uses are now available and may be had on application to the Director, United States Geological Survey, Washington.

New Steel Plant in New South Wales

WASHINGTON, July 12.—A new steel works is to be established at Port Kembla, New South Wales, a new port 60 miles south of Sydney, according to a report received by the Bureau of Foreign and Domestic Commerce. A large breakwater is nearing completion, which will considerably enhance the natural facilities of the port and provide the required accommodation for the largest vessels trading to Australia. The port is in the center of a large coal mining district, and it is believed that when the works are in operation, many subsidiary industries, depending upon the free supply of iron and steel, will be established. It is stated that the outlay on the works will be in the neighborhood of £2,000,000. The same company is now operating iron and steel works at Lithgow, which is 100 miles inland from Sydney.

Suits for the recovery of $75,000 and a reasonable attorney fee recently were instituted against James C. Davis, Federal director-general of railroads, by the Central Iron & Steel Co., Harrisburg, Pa., in Federal court at Scranton, Pa. It is alleged that while the Government was in control of the Philadelphia & Reading and the Pennsylvania railroads, the plaintiff was compelled to do considerable shifting of cars into and out of its plant at its own expense in connection with shipments made over the roads mentioned, and that the shifting complained of should have been done by the railroads without cost to the plaintiff. Because of this, the plaintiff seeks to recover $40,000 for the shifting done on the Pennsylvania and $35,000 for the shifting done on the Philadelphia & Reading.

Repeated Shut Downs of Coke Ovens

Twenty Years' Experience With By-Product Plant Near Wheeling, W. Va., With Floods and Stoppage for Other Reasons

BY J. M. HASTINGS, JR.

THE impression seems to have gained considerable credence that a by-product coke oven plant cannot be allowed to become cold without serious consequences and more or less complete rebuilding before it can be started again. Some owners are even going to heavy expense to keep their oven plants hot, or are selling coke at a serious loss to avoid a shut-down. A report recently received from a plant of by-product ovens near Wheeling, W. Va., shows that a correctly designed plant may be shut down completely without serious injury.

In 1898 a plant of 60 Semet-Solvay ovens was built for the Riverside Iron Works, now owned by the National Tube Co. at Benwood, W. Va., just outside of Wheeling. Two years later 60 more ovens were added. The plant was built on the flat land along the Ohio

Oven in Operation 17 Years and Out of Running 20 Times for a Total of 5 Years and Yet Requiring No Replacements of Lining

River, and although the records of high water were carefully studied for a long period, the progressive denudation of the forests made these records of little value, and three years after the first ovens were started the plant was put out of operation by high water. During the twenty years from April 24, 1901, when this first shut-down occurred, to March 16, 1921, the date of the most recent shut-down, the Benwood coke oven plant has been closed down and started up again twenty distinct times.

Seven times in that period the Ohio has flooded the district and effectively put the ovens out of commission. Most of these interruptions were for relatively short periods, although in each case the plant was kept in operation until water entered the waste heat flues. In March, 1907, however, flood water was high enough to enter the sole flues and reach the oven floors proper, causing an 18-day shut-down, and in April, 1913, the worst flood in the history of the river brought the water into the lower heating flues 15 in. above the floor of the ovens. On this latter occasion a shut-down of 25 days resulted, largely because natural gas for starting up again was not available for some time after the flood subsided.

In addition to interruptions caused by floods, the plant has been down four times on account of coal shortage, twice for repairs to the hydraulic mains and seven times on account of business conditions. Duration of shut-downs from this last cause has ranged from one month in 1914 to a year and seven months in 1907 to 1909.

During its entire twenty-two and a half years' existence, the Benwood plant has been shut down 1958 days, or a total of 5-1/3 years up to March 16 of this year, since which date it has again been cold. Several other Semet-Solvay plants have been shut down for varying periods, but none has approached this record and probably none ever will, due to the peculiar circumstances at Benwood.

Notwithstanding this rather remarkable record of shut-downs, the present condition of the plant shows that it has suffered no serious damage. Of course these extraordinary and repeated stresses on such a large amount of brickwork cannot be encountered without some injury and expense for repairs. But the constrution of this type of oven, with the well-known strong division wall between the ovens, was so substantial that any injury occasioned by these vicissitudes has been of a minor nature, as is shown by the following records.

Of all the ovens built in the United States, No. 30 oven in block No. 1 at Benwood, illustrated in the accompanying cut, holds the record for low repair costs. This oven has been in operation 17 years and out of running 20 times for a total of over five years, and to date has required no replacements whatever in its lining or brickwork. No. 60 oven in block No. 2 is a close second, having required less than $20 expense for brickwork repairs. It should be further noted that the two ovens mentioned at Benwood are both end ovens, which is the point where injury to the structure of the blocks often first appears. The repair records of these two ovens are of course exceptional, but the record of the entire plant has been remarkable, despite the numerous interruptions.

In addition to these repair records on the ovens, the yields obtained at the Benwood plant have been very satisfactory and compare favorably with those from the best modern plants. For the five-year period from Jan. 1, 1915, to Jan. 1, 1920, during which time the plant enjoyed fairly continuous operation, the average results were as follows:

Analysis of Coal Charged		*Yields Obtained*	
Volatile	29.9 per cent	Total coke	78.2 per cent
Fixed carbon	62.2 per cent	Sulphate of ammonia,	24.5 lb. per ton
Ash	7.9 per cent	Light oil	3.11 gal. per ton
		Tar	10.0 gal. per ton

These records show conclusively that that plant has not suffered by reason of its many shut-downs and the same should be true for any correctly designed oven plant. Of course it is necessary to exercise care and to take certain precautions when closing down a coke oven plant for an indefinite period. The process is, in general, just the reverse of that employed in starting up a block. The heats should be lowered gradually by a gradual reduction in the supply of fuel gas, so that the contraction of the block will take place slowly and regularly. As this contraction progresses, the tie rods should be readjusted and a close watch maintained to guard against cracks developing.

If the coke is left in the ovens, as is sometimes done when a long shut-down is not anticipated, the greatest care must be used in sealing the ovens as nearly airtight as possible. The door frames must be kept tight

against the brickwork, uptake pipes maintained in proper position and charging hole covers sealed tight. With an experienced operator in charge there is no reason why a block of ovens of correct design cannot be shut down for a longer or shorter period, without extraordinary labor or heavy repair expense on starting up.

Steel Works and Rolling Mills

Census Bureau's Summary Concerning the Industry, 1919 and 1914

WASHINGTON, July 7.—Figures of the 1919 census of manufactures, with respect to steel works and rolling mills prepared by the Bureau of the Census, are based upon the returns from 487 establishments with products for the year valued at $2,814,179,000. At the census of 1914 there were 427 establishments with products valued at $918,664,600, an increase of $1,895,514,400, or 206 per cent, due very largely to increased unit prices.

The output of finished rolled products and forgings aggregated 25,368,000 gross tons, valued at $1,852,128,100, as compared with 18,482,000 tons and $623,486,000 in 1914; an increase of 37.3 per cent in tonnage and 197 per cent in values, and an increase in average unit values from $33.20 per gross ton in 1914 to $73 in 1919, or 120 per cent. Tonnage figures reported differ from those of the American Iron and Steel Institute, as given at pages 925 and 985, THE IRON AGE, Oct. 7 and 14, 1920.

The increase in leading groups of products was reported as follows:

Plates and sheets. Output, 1919, 7,682,000 tons,

Summary	1919		1914	
Number of establishments	487		427	
Steel works and rolling mills	149		113	
Steel works, no hot rolling	99		96	
Rolling mills, no steel furnaces	239		218	
Principal Materials Used	Quantity, Gross Tons	Cost	Quantity, Gross Tons	Cost
Pig iron	23,868,000	$579,948,000	17,128,000	$232,132,000
Spiegeleisen and ferromanganese	343,800	41,083,000	301,600	16,499,000
Other alloys (ferro and nonferro)	94,700	31,894,000		
Scrap purchased	6,944,300	143,072,000	5,070,900	59,382,000
Scrap made and consumed	9,197,800	.....	5,585,300	.....
Steel, crude and unfinished	9,353,600	388,412,000	6,458,400	132,178,000
Steel Production				
Total	33,908,800		23,383,500	
Open-hearth:				
Basic	25,642,000		16,233,100	
Acid	968,200		830,200	
Bessemer	6,946,600		6,218,800	
Crucible	64,300		79,800	
Electric and all other	287,700		21,600	
Ingots	33,287,300		22,814,300	
Direct castings	619,500		569,200	
*Products**	Quantity Gross Tons	Value	Quantity Gross Tons	Value
Total		$2,814,179,000		$918,664,600
Steel works and rolling mills		1,884,159,500		593,874,700
Steel works, no hot rolling		126,152,300		39,783,000
Rolling mills, no steel furnaces		803,867,200		285,006,900
Finished rolled products and forgings	25,368,000	1,852,128,100	18,482,000	623,486,000
Plates and sheets:				
Plates (No. 12 and thicker)	4,307,200	290,293,900	2,183,800	62,768,600
Sheets (No. 13 and thinner):				
Black for tinning	1,084,200	94,456,200	1,011,900	43,147,000
Other	2,290,600	227,284,200	1,515,500	67,017,400
Skelp	2,589,000	150,157,900	1,960,800	52,443,300
Cotton ties	42,700	3,509,500	603,900	19,945,100
Hoops, bands and strips	791,000	66,361,700		
Nail and tack plate	34,600	2,573,000	50,300	2,008,300
Rails	2,088,800	92,849,500	1,842,000	54,009,900
Rails, rerolled	95,600	4,738,900	63,700	1,438,200
Rail joints and fastenings, tie, plates, etc	462,700	27,596,700	349,300	11,527,000
Structural shapes	2,526,400	151,970,100	2,083,400	57,475,400
Steel bars, merchant, mill shafting, etc	4,026,400	326,729,300	2,062,800	71,352,400
Iron bars, merchant, etc	450,200	33,306,500	411,900	13,057,100
Reinforced concrete bars, iron and steel	301,400	18,426,800	269,700	7,751,500
Iron and steel rods:				
Wire rods to be drawn or rolled	2,484,400	126,738,100		
Cold-rolled, cold-drawn, etc	145,700	17,676,700	2,377,700	61,578,100
Rolled wire rods in coils or bars, crucible, electric or cementation steel	15,300	4,463,300		
Bolt and nut, spike and chain, horseshoe nail rods and horseshoe bars	223,400	14,616,500	535,900	18,319,900
Axles, rolled or forged	97,800	9,753,000	89,400	3,407,300
Armor plate and ordnance	101,100	55,699,600	38,700	19,947,900
Car and locomotive wheels, rolled or forged	117,700	17,044,700	1,031,100	56,291,600
Rolled, forged or other iron and steel products not otherwise enumerated	1,091,800	115,881,800		
Partly finished rolled products (sold or transferred to other works of same company)	9,266,000	389,596,300	6,408,000	130,674,900
Blooms, billets and slabs:				
Rolled for forging purposes	186,500	10,669,800	65,900	1,695,600
Hammered charcoal	17,800	920,700	.....	.....
All other (steel)	6,024,100	249,394,100	3,991,900	80,638,700
Sheet and tin-plate bars	2,864,600	117,855,800	2,241,700	45,372,800
Muck and scrap bar	173,000	10,755,900	108,500	2,967,800
Unrolled steel (sold or transferred to other works of same company):				
Ingots	713,000	33,315,200	63,400	1,383,500
Direct steel castings	585,000	112,153,600	569,200	44,733,700
Scrap iron or steel (for sale or transfer to other works of same company)	2,112,000	37,381,400	1,446,200	16,334,800
All other iron and steel products, including value added to rolling-mill products by further manufacture	.....	361,084,300	.....	85,239,000
All products other than steel or iron, including custom work and repairing	.....	28,520,100	.....	16,812,700

*In addition, steel castings and rolled steel valued at $5,419,600 was produced by 7 establishments in 1919; and to the value of $2,831,964 by 13 establishments in 1914, not classed as "Steel works and rolling mills."

valued at $612,034,300, an increase with respect to 1914 of 63 per cent in tonnage, 254 per cent in value, and in average unit value from $36.77 to $79.67 per ton.

Skelp. 2,589,000 tons, valued at $150,157,900, an increase of 58 per cent in tonnage and 186 per cent in value, and in average ton value from $26.75 to $58.

Rails. 2,088,800 tons, valued at $92,849,500, an increase of 13.4 per cent in tonnage and 71.9 per cent in value, and in average ton value from $29.32 to $44.45.

Structural shapes. 2,526,400 tons, valued at $151,970,100, an increase of 21.2 per cent in tonnage and 165 per cent in value, and in average ton value from $27.60 to $60.

Merchant bars, etc., iron and steel, 4,476,600 tons, valued at $360,035,800, an increase of 81 per cent in tonnage and 327 per cent in value, and in average ton value from $34.51 to $80.43, and

Wire rods, 2,645,400 tons, valued at $148,878,300, an increase of 11.2 per cent in tonnage and 142 per cent in value and in average ton value from $25.90 to $56.28.

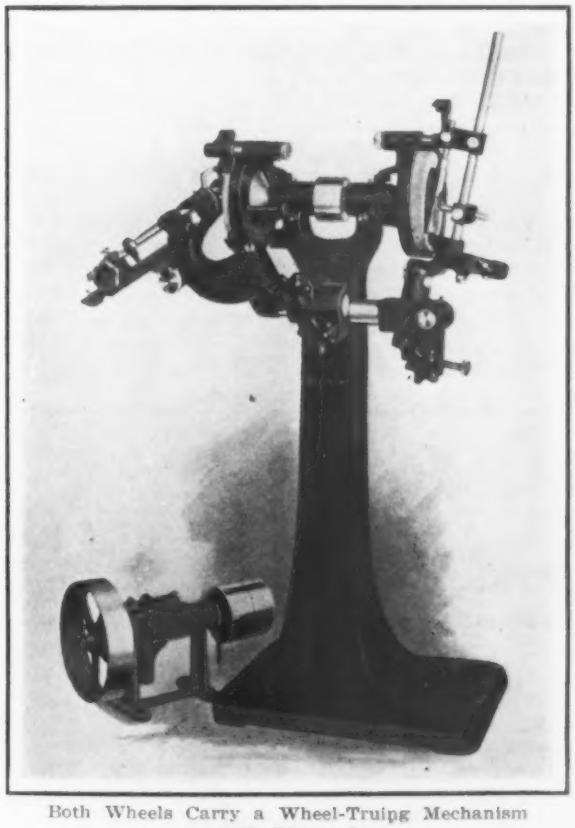
There was manufactured 33,908,800 tons of steel in 1919, compared with 23,383,500 tons in 1914, an increase of 45 per cent, chiefly in open-hearth steel. The plants consumed 23,868,000 tons of pig iron in 1919, or 78.14 per cent of the pig iron production for the year.

The per cent ratios of increase in average unit values, 1914 to 1919, for the different classes of products are quite uniform for all other than railroad steel, viz: 113 per cent for reinforced concrete bars; 117 for plates and sheets, skelp, or structural shapes and wire rods; 133 for merchant bars; 154 for cotton ties, hoops or bands, and 162 for axles; for steel rails the increase in average unit value was but 51.6 per cent.

Combination Tap and Drill Grinder

A combination tap and drill grinder intended for shops not having enough work to justify the installation of separate single purpose machines has been placed on the market by the Grand Rapids Grinding Machine Co., Grand Rapids, Mich. It is said to incorporate the features of the single purpose machines previously introduced and automatically grinds the same taper and clearance on every flute.

The machine is made in two styles of two sizes



Both Wheels Carry a Wheel-Truing Mechanism with Diamond

each. In the first style, taps No. 6 to 1½ in., and drills ⅛ to 1½ in., and No. 52 to ¾ in. can be ground, taper on taps being limited to width of the wheel which is regularly 1½ in. In the other style, taps ⅜ to 3 in., and drills ¼ to 2½ in. and ⅛ to 1½ in. can be handled. The latter combination can be furnished for wet grinding.

The drill grinding side is equipped with a holder stop, which, working in connection with the base of the diamond truing device, automatically places the drill holder in proper relationship with the face of the grinding wheel. This is said to be an exclusive feature. Both wheels carry a wheel-truing mechanism with diamond, machines of the first style having two types one of which is for truing the periphery of the tap grinding wheel and the other for truing the face of the drill grinding wheel. In machines of the second style both wheels are cup shaped and the diamond truing device is arranged for keeping the face of the wheel in proper shape. Diamonds of approximately ½ carat are furnished for each wheel.

The floor space occupied is 2 x 3½ ft., height to center of spindle, 44 in., and net weight 385 and 400 lbs. The specifications give the grinding wheels as 8½ x 10 in. in diameter; the spindle speed 1600 r.p.m.; the main frame studs 2¼ in. in diameter, and the swivel bearings 1⅛ x 4½ in.

Lower Prices in Refractories Expected

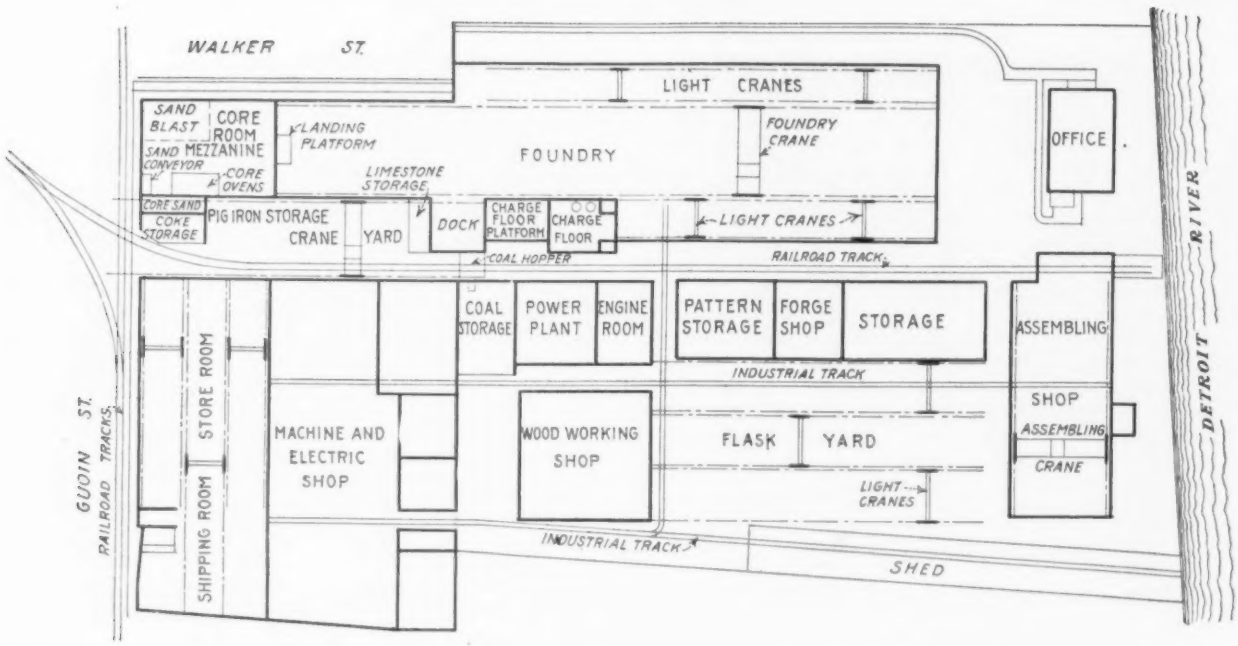
PITTSBURGH, July 11.—Prices of fire clay brick and other refractories are holding at the quotation established more than a month ago, but there is almost no business on account of the exceedingly limited activities of the iron and steel industry. It is more than probable that the appearance of attractive orders would lead to price concessions; in fact, it is currently reported that quietly there has been more or less shading of the public quotations on the small orders which have come out recently. In view of the recent public announcement of lower prices on steel, it is possible that the refractories industry, at an early date, may contribute to this step in the readjustment movement by making a voluntary reduction in prices as it did following the announcement by the Steel Corporation in April. Current operations of the refractories plants are running between 15 and 20 per cent of capacity. A good many plants in various parts of the country are shut down, and most of those which are running are producing special sizes and shapes. On standard sizes and shapes, most of the manufacturers are easily meeting current demands from their stocks.

We quote per 1000 f.o.b. works:

Fire Clay:	High Duty	Moderate Duty
Pennsylvania	$36.00 to $43.00	$30.00 to $36.00
Ohio	36.00 to 40.00	30.00 to 35.00
Kentucky	36.00 to 40.00	34.00 to 38.00
Illinois	40.00 to 45.00	30.00 to 40.00
Missouri	45.00 to 50.00	35.00 to 40.00
Silica Brick:		
Pennsylvania		35.00 to 40.00
Chicago		42.00 to 45.00
Birmingham		46.00 to 50.00
Magnesite Brick:		
Standard size, per net ton		70.00 to 75.00
Chrome Brick:		
Standard size, per net ton		60.00 to 65.00

Ferromanganese Hearing Postponed

WASHINGTON, July 12.—Proceedings in the so-called ferromanganese anti-dumping case have again been postponed by the Federal Trade Commission, this time for one week, or until July 19, on account of the illness of Attorney Joseph E. Davies, representing respondents in the case. Mr. Davies is in a hospital in New York. The case is to be heard in that city at the offices of the commission when the hearings are resumed and at which time the respondents will submit their defense.



Handling Materials in a Remodeled Foundry

But Few Carrying Units Used at Murphy Iron Works, Detroit—New Crane Installations Saved in a Year Over Double Their Cost

MAKING over a foundry to an efficient and harmonious whole out of a series of disconnected units where the area was limited because of city streets was the problem faced by the engineers who remodeled the Murphy Iron Works, Detroit, maker of Murphy automatic furnaces and Riley underfeed stokers. The various buildings of the Murphy plant were constructed at widely separated intervals with no idea of co-ordination. The extension of the foundry, the installation of the yard crane and the present systems of handling were completed about a year ago.

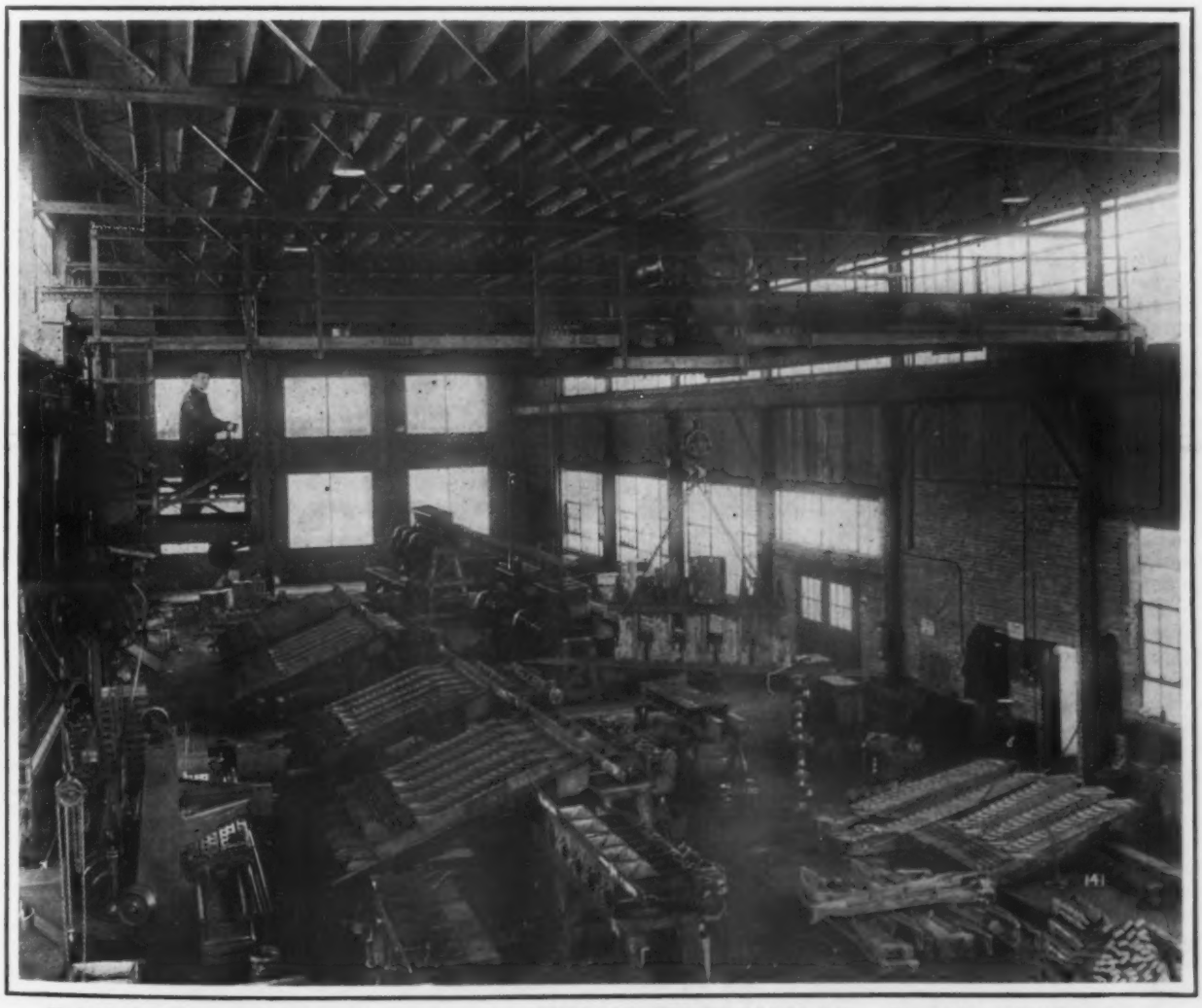
In the remodeled plant comparatively few handling units are used, the great bulk of the material being moved by two electric traveling cranes only, one in the yard and one in the foundry. According to Frank B. Bigelow, general manager, and George I. Bouton, chief engineer, both of whom were responsible for the changes, in one year from the installation of the yard crane alone the company had saved more than twice the cost of the crane, the runways and the entire expense of installation.

Coke, coal, pig iron, sand, etc., are switched in on cars on the spur track between the foundry and machine shop buildings. This open space is covered by a 10-ton 3-motor Northern type E crane, 51 ft. span, designed with high speed to handle a clam shell bucket, a lifting magnet, and to be used for general handling purposes. The bucket is electric-driven with a motor

This Material Storage Openway Separates the Foundry from the Machine Shop and Other Units. The platform in the background holds raw material for near-future use in the cupolas beyond

The Crane Ladles Are Deposited on Floor Ladle Trucks, by Which the Molten Iron Is Distributed

in the bucket, 1 cu. yd. capacity, made by the Hayward Co., New York. The lifting magnet, 45 in. diameter, was manufactured by the Electric Controller & Mfg. Co., Cleveland. The crane runway extends in one direction as far as the angle of the foundry containing the cupolas, and in the other direction it cantilevers over the street, permitting the crane to handle material from the street railroad track at right angles to the yard track. An open landing platform, or dock, is at one end at the same level as the charging platform. This dock has a several days' storage capacity of raw material for the cupolas. A car of coke is



Underfeed Stokers and Automatic Furnaces Are Assembled in This Well-Lighted Bay, Served by a 7½-Ton Crane

switched in and unloaded by the crane and bucket in 60 to 90 min. The coke for immediate consumption is placed on the dock and the remainder deposited in the coke storage bin whence it may be transferred to the dock as required. The core sand and limestone are handled in like manner, the former being placed in the core sand storage bin, and the latter carried either directly to the dock or to the storage bin in the yard. For handling pig iron, the lifting magnet is substituted for the bucket, the change requiring only two minutes. The iron is unloaded from the car 1200 lb. at a lift. An average car can be unloaded in 30 min. The pig iron is placed in various piles in the yard until the analysis can be checked, whence it is transferred as required to the dock. Scrap for melting is handled in a like manner. The coal for the power plant is moved by the crane and bucket, being discharged into a steel hopper located over the railroad track from which it descends by gravity to the coal storage pile contiguous to the boiler house. A car of coal can be unloaded in 45 to 60 min.

From the dock the material is fed to the cupolas by industrial cars and charging boxes, and as each load passes through the door opening from the dock to the charging floor it is weighed by the scales at that point. An Otis electric elevator is located in one corner of the charging room, to be used as an auxiliary for carrying material in case of any interruption to the service of the yard crane, or in case that crane is being used on other service.

The foundry, with a capacity of 50 to 60 tons per day, is 500 ft. long, with the main bay 56 ft. in width and the side bays 25 ft. wide. The main bay is served by a Northern 10-ton 4-motor type E electric crane with a 5-ton auxiliary hoist, and in the side bays over the molding floors are several single girder cranes with electric hoists of 1 and 2-ton capacity. Two 84-in. Newten cupolas, made by the Northern Engineering Works, Detroit, melt the iron, and can be used together or alternately. The foundry is exceptionally light and airy and is provided with an efficient heating and ventilating system for which the Green Economizer Co. furnished the blower and the heating unit. A locker room for employees is under the docks and is provided with shower baths and other lavatory equipment.

At the north end of the foundry, is a mezzanine floor upon which are located the core room and the core ovens. The core sand is carried from the outside storage bin to mezzanine level by an electric-driven conveyor built to a special design by the Murphy Iron Works. The mezzanine floor is furnished with a landing platform so that the foundry crane can place on or remove any material from the mezzanine floor to the foundry floor.

Below the mezzanine on the main floor level is located a battery of electric-driven steel tumbling mills built by the Sly Mfg. Co., and also Mott sand blast equipment with its ventilating system, overhead tracks, etc.

The cores are baked on racks moved about on the core room floor by Barrett lifting trucks. When removed from the ovens, the racks are wheeled to the landing platform where they are picked up by the foundry crane and distributed to various parts of the foundry.

The iron is poured from the cupolas into a reservoir ladle on wheels suitable for being moved back and forth between the two cupola spouts. From the reservoir ladle it is received by the crane in a crane ladle and carried to a certain station in the foundry where the crane ladle is deposited in a special floor ladle truck with flat wheels which makes it possible to move the floor ladle from place to place. There are several of these floor ladle trucks at different points in the foundry, and the function of the crane, while pouring, is to deposit full ladles on the trucks at various points and take back the empty ladles for refilling. From the floor ladles the iron is distributed to the molds by hand ladles although in the case of large molds it is sometimes poured direct from the crane. With this system the one crane can take care of the entire foundry while pouring, as its function is principally to keep the floor ladles supplied with hot metal. The use of a standard overhead traveling crane for primary distribution to small ladles is interesting as compared with the usual monorail distributions.

In shaking out, the castings are collected in boxes and carried by the crane directly to the tumbling mills at the north end of the foundry. Sprues and risers are also carefully tumbled to free from sand before being returned to the cupola.

After the castings are tumbled or treated by the sand blast, they are carried in trucks on an industrial track to the machine shop, where they are handled by small cranes or overhead tracks. The small units are assembled in a shop adjacent to the machine shop but the large units are carried through various stages to the main assembling shop where they are handled by a 7½-ton Northern 3-motor crane, 44 ft. span. The railroad track also runs into this shop and the large units are loaded by the crane and shipped from this shop.

British Steel Exports at Low Point in May—Imports Declining

British steel exports in May this year, excluding iron ore and including scrap, were 101,202 gross tons as compared with 161,508 tons in April, 149,847 tons in March, 167,158 tons in February and with 233,114 tons in January. The May exports last year were 332,869 tons. The average per month in 1920 was 274,881 tons per month, while in 1913 it was 420,757 tons per month. The 1919 rate was 188,519 tons per month. The May outgo is therefore less than even the 1919 monthly average and close to the smallest in the war years. Imports in May were 89,348 tons, which contrast with 196,945 tons in January, 181,565 tons in February, 179,610 tons in March, 111,536 tons in April, and with 128,685 tons per month in 1920. The 1913 imports were 195,264 tons per month.

Expressed as a table the exports and imports this year and in previous years were as follows in gross tons:

	Exports	Imports
January, 1921	233,114	196,945
February, 1921	167,158	181,565
March, 1921	149,847	179,610
Average per month, first quarter, 1921	183,373	186,040
April, 1921	161,508	111,536
May, 1921	101,202	89,348
Average per month, 1919	188,519	50,801
Average per month, 1920	274,881	128,685
Average per month, 1913	420,757	195,264

The trend of some of the principal exports is shown by the following data in gross tons:

	Average per Month 1913	Average per Month 1920	May 1920	May 1921
Pig iron	78,771	38,505	51,633	7,673
Steel rails	41,676	11,213	11 088	10,522
Steel plates	11,162	16,571	19,621	5,607
Galvanized sheets	63,506	34,244	41,761	10,679
Steel bars	20,921	30,322	36,898	4,851
Tin plates	41,208	29,418	36,480	12,350
Black plates	5,679	3,026	3,846	979
Steel sheets	....	....	19,266	3,078

The May exports of all products showed a marked decline from May, 1920, and in most cases are not up to the average per month in 1913.

Pig iron imports in May were 19,344 tons as compared with 15,744 tons in May, 1920. The monthly average imports in 1920 and 1913 were 12,705 tons and 18,059 tons respectively.

Iron ore imports in May were only 15,696 tons as compared with 541,742 tons per month in 1920. In May, 1920, they were 710,592 tons. The total for the first five months was 1,249,957 tons as compared with 2 784,329 tons in the first five months in 1920.

Manganese ore imports were 21,518 tons in May against 37,717 tons per month in 1920 and 50,098 tons per month in 1913. The total to June 1 this year was 133,704 tons against 140,387 tons for the same five months last year.

Automobile production in the Detroit district during April, 1921, is reported at 140,955 cars, as compared with 105,245 in March, 1921, and 119,213 in April, 1920. The Ford production alone was 90,125 automobiles and trucks. Ford recently reached an output of 4000 a day.

Orders have been issued recalling 250 men to the shops of the Pennsylvania railroad at Logansport, Ind. They were laid off last December.

Cutting Overhead Cost Instead of Wages

A Large Detroit Automobile Company Paid War Time Wages, Ran Half Time and in the Same Period Made Profits

BY DON F. KENNEDY*

LAST December the automotive industry was at its lowest ebb. Cancellations had wiped out unfilled orders and shipments had eaten up the balance. Few, if any, new orders came in from day to day.

Employment in Detroit, the center of the industry, was at a crisis. The city poor commission was swamped with demands it could not fill. Clerks and stenographers from other city departments volunteered to work after hours to help the poor commission get caught up with the appeals of frantic fathers and mothers. All the chain grocery stores carried signs announcing that poor commission vouchers would be honored.

Factory after factory laid off men by the thousands. Some were running three days a week, some two days a week and many were closed tight, including some of the very largest.

At this time the writer interviewed the heads of representative manufacturing concerns to get their ideas toward labor in general, with particular reference to their intentions toward reducing wages, to obtain information for an article which appeared in the Dec. 9 issue of THE IRON AGE, entitled, "What will Employers Do About Labor?" Some were more or less open in their remarks, some were afraid to talk on the subject, and a few refused to be interviewed.

LAST December an automobile company cut the price of its car, but announced that it would not reduce the wages till the cost of living came down and justified it in doing so.

This article is written by the man who interviewed the factory manager. He now gives the results that have come from carrying out this policy.

The company has done as it said it would six months ago. The interesting part of the story is the ways in which it was actually able to make money through the bad times it experienced along with all the rest of the motor industry.

This was six months ago, before the attitude of labor had had time to adjust itself to the thought of lower wages which it has since accepted—and quite gracefully, too, for the most part. All these employers had reductions in mind, but only a few felt themselves quite justified, or had the moral courage to say so. They were not sure that they were morally warranted in reducing wage rates; that their attitude would be in line with public opinion; that their workmen were ready to accept wage cuts without protest, although they realized that with the unemployment situation such as it was, they could put into effect any kind of a cut, and get plenty of men, no matter what the wage.

I said that all the employers had reductions in mind. There was one exception. His ideas were different. His plant was running three days a week. Those readers who saw the article in question may recall that I quoted one man as saying that wages should not be reduced, and that his company for one would not reduce them until retail prices dropped sufficiently to warrant such a cut. His idea was that profits, overhead expense, manufacturing methods and material prices should be looked at closely, and reductions in expense made by cuts from these items rather than from the wages of the workmen.

Six months have elapsed and it should be interesting to find out how this theory has worked out in practice. I know that this attitude sounded more or less altruistic to me at the time. It was an admirable idea, but how practical? How would it work out in dollars and cents?

This company is one of the large automobile makers and a representative one. During the past winter it worked on an average of less than half time, which has about averaged up with the rest of the industry. It made a cut of more than $200 in the price of its car last fall. This represents more than the average automobile manufacturer's profit per car. The overhead expense of these enormous factories, filled as they are with expensive machinery, runs on day and night, whether the factory is running or closed. This company faced this situation; it was running less than half time, it had cut the price of its product as much or more than its normal profit, and it proposed to keep wages up to war-time standards.

How Has It Worked Out?

I called there again the other day and saw how it had worked out. I found that the first wage cut was being put into effect the day I called in the middle of May. It was almost six months from the time of the original interview. Comparison between the wages paid in that plant and those paid in other similar plants in the city showed that this company was paying higher rates than the average in every department. These figures are at the disposal of all members of the Employers' Association of that city.

Running less than half time and keeping up war-time wages, the company has actually made money every month! The seemingly altruistic general manager has actually put his plan into effect and made money while doing it.

"We are turning out a better car to-day," he said, "than we have ever turned out. Our standards of accuracy are higher. We, in common with all manufacturers, were inclined to let things slip a little during the great pressure that was brought to bear on the automotive industry during the past two years. We find, however, that everyone handling our cars is becoming more particular. The buyer now complains of little matters which formerly would have been overlooked. The dealer in the past would fix them up himself and say nothing. Now he complains to the distributor. The distributor collects all these instances together and brings them to the factory.

"Several months ago we brought to the factory in convention the service managers of our ten largest distributors, located in the principal cities all over the country. Together we went over the

*Sales engineer, Detroit.

praiseworthy idea that a system or a report will make things go better.

'So he starts one, without the supervision of the executive who has a better outlook on the relation of that idea to the whole situation. Sometimes reports grow out of the necessities of the time. They continue long after their usefulness has ceased. Some are started in error; they never had an adequate excuse for existence.

"Each individual has his own ideas. All want to improve on the work of their predecessors, which is quite natural. It is the fault of the executives that so many systems are allowed to develop.

"And the cost of all these systems and reports may be just the difference between profit and loss on the balance sheet. You start the memorandum system and it goes on indefinitely. A man writes a memorandum to a department with copies perhaps for several other departments. The memorandum gets attention, and the copies get attention, and they probably all get answered, which answers call for still further replies. These get interchanged, taking up the time of a lot of people, and the copies and answers clutter up the files so that you can't find what you do need. A virtual chain-letter system develops that keeps stenographers busy on unimportant work.

"There are not more than 100 memoranda in any one department in the course of a year that are useful three months after they are written."

"How did you happen to get started on this subject of eliminating reports?" I asked him. "Where did you commence?"

"The first thing I did," he replied, "was to lay out on my desk all the reports that came into this office. They more than covered it. I analyzed them all to see how much of this information was actually necessary for the running of this business. I came to the conclusion that it could all be condensed in very much smaller space. Every report represents considerable time of various people in compiling it.

Started on His Assistant First

"My first job was to show my assistant that our system had run away from us so that our men were working for the benefit of the system, rather than using the system for the benefit of the balance sheet. He was the hardest man to convince. He finally saw things my way and together we went through this report business.

"We looked into our welfare department. Like everyone else who has had the subject of labor to contend with the last few years, we found that we had to take more interest in the problem. We developed a welfare department, and had been recently considering some additions to it.

"Looking into the various records and reports we had gradually developed, I came to the conclusion that we, as well as other employers, were acting as though the workman was a child to be held in our lap. We decided that we were interesting ourselves in a lot of things that were none of our business. What records are actually needed in hiring and firing? We came to the conclusion that our one original employment card has all the necessary information. This tells us when a man applies for work whether he has worked for us before; if so, when; how much he was making, and why he left.

"Several years ago we decided to manufacture some of our units that we had formerly purchased. I made an extensive trip around the country investigating systems developed by other manufacturers. I found one in an Eastern shoe factory that had given desirable satisfaction and I decided that this or a modification of it was better adapted to the new work we were undertaking at our plant than any I had seen. I handed it over to our people to develop. They installed the system, and as is perfectly natural, 'improved' on it. The result was that we had to have a $5,000 man to run the system.

"Now I looked into the workings of our elaborate cost system. The first thing I found was that it didn't tell us our costs. None of these elaborate systems do. We made it both simpler and more accurate.

"Another system that had developed unnoticed to a point where it was costing us $12,500 a year was a cross index of the parts numbers of all the parts of each individual car. By means of it, knowing the number of the frame, the magneto and the clutch, we could tell the number of the car. You can see what a cumbersome thing this becomes when keeping track of cars by the 100,000.

"We have so simplified and condensed our records that our time study, stores and production systems are all under one head."

Many Inspectors Eliminated

"We went after our inspection system. The customary system is wrong end foremost. You pay a mechanic $1 an hour to produce accurate parts, and then pay a non-mechanic 50 cents an hour to watch the mechanic. The mechanic who knows an inspector will catch his errors won't try very hard to get the work right in the first place.

"We now hold the department foremen responsible for the work. The foreman of each operation is held responsible for his part of the work until it gets to the assembly line, where the first inspectors are stationed. We have almost entirely eliminated the use of inspectors on minor operations but use them to catch any work not up to standard at the various assembly points. In return for this responsibility we are paying most of our foremen a little more money than we did.

"We find that when the workmen know that it is up to them to turn the work out right with no inspector except their foremen to catch it if it isn't, they will do it properly in the first place. This change has given us better results at a lower cost.

"During the war times we hired a number of outside factories in which to make parts of our car. The cost of trucking materials to and from the branch factories and the main plant was a large item of the expense. This has been eliminated."

I asked him what they had done about contracts for raw materials, that is, about canceling them. "We have never tried to evade our obligations under a signed contract. I instructed our purchasing department to act under the theory that we made the contracts in good faith, and to act accordingly. We have made requests for reductions from most of our sources of supply with whom we had contracts, and have had very satisfactory co-operation from most of them.

Decided Stock Chasers Are Unnecessary

"Another thing we have done is to eliminate all stock chasers. I came to the conclusion that we did not give our suppliers sufficient credit for being good business men, for wanting our business, and being just as anxious to ship their stuff to steady customers who always pay their bills on the 10th, as we were to get them. We have eliminated all of this expense."

"But what about your whole production line being held up for lack of some one part? Do you

not consider a stock chaser needed for such emergencies?" I asked him.

"Why chase one temporary item?" he replied. "As soon as that is found some other item is missing, and so on. No, we have stopped them all. We have also eliminated this local stock chasing around town which is peculiar to Detroit. In other cities supply dealers deliver their material. Here in Detroit we send out pick-up cars and collect our various purchases here and there. We have stopped them all, and their salaries and traveling expenses.

"We have consolidated departments. The simplification of our system has rendered unnecessary certain high-salaried department heads. It has cut out useless effort on the part of a lot of clerks, stenographers and department heads. We combined the functions of several departments under one head, instead of three or four. We have cut out straw bosses and inspectors. Our workmen are contented. They are producing more per man. They have a most kindly feeling toward our company which I know will last for a long time, and we have the satisfaction of knowing that we followed a policy we felt to be right, and made money for our stockholders while doing it."

I admit that this is a feat, one worthy of study and thought. This man's experience goes a long way toward answering the question so often asked when such questions as upholding wages arise: "We know it sounds ideal, but is it practical?"

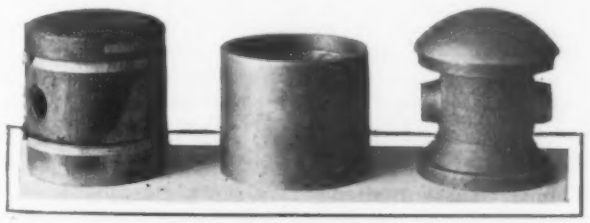
A Gas-Engine Piston Without Rings

Importance of the Continuous Oil Film in Lubrication Stressed—Avoidance of Uneven Expansion

BY STERLING H. BUNNELL*

BY theory and many tests it has been shown that two surfaces, such as a shaft and its bearing, are kept apart by the surface-tension of a film of oil or grease. By loading the bearing, the oil film is forced to become thinner in the direction of the greatest strain. As the shaft revolves, oil entering the bearing at an opening, generally at the top, travels around the shaft in a film of gradually decreasing thickness until at the bottom of the bearing the minimum is reached. Passing on around the bearing in the direction of motion the oil film becomes thicker toward the unloaded portion of the bearing surface, at which point the pressure is sufficiently low to permit the introduction of the lubricating supply.

If the load in the bearing is gradually increased, under test conditions, it is observed that the oil film becomes thinner at the line of greatest strain; until finally under excessive pressure the film is broken and the shaft comes in contact with the bearing surface and seizes. Evidently anything which tends to disturb



At Left Is a Ringed Piston Just as Removed from the Cylinder, with a Heavy Carbon Deposit. At right is the new Tismer piston center, upon which the thin barrel (center) is screwed

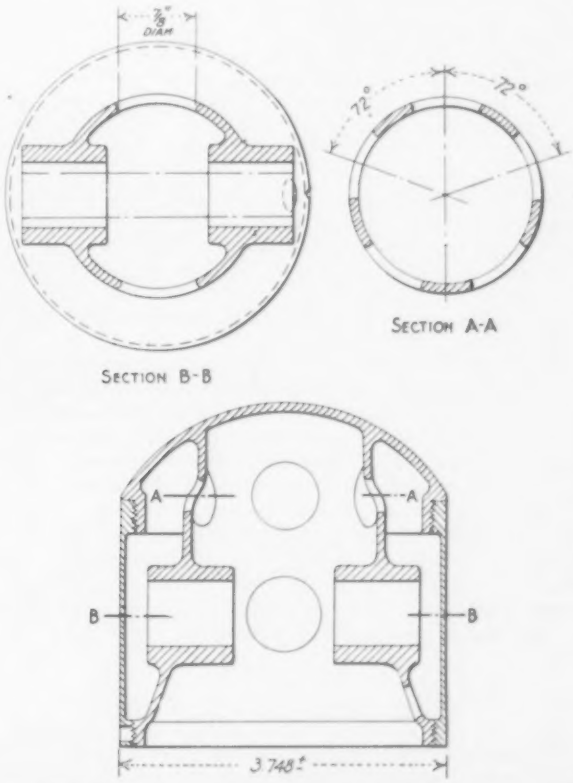
the film of oil, or to decrease its thickness, reduces the load which can be successfully carried by the bearing.

This reasoning applies equally well to reciprocating motion. A cross-head, sliding back and forth in a guide, tends to work out the oil film between the slide and guide surfaces, and the tendency is opposed by the surface tension of the oil film. The best form of slide is a perfectly smooth surface, with the ends slightly rounded to prevent cutting into the film of oil. The bearing qualities of the surface would be very much reduced by cross grooves or other openings which would release the pressure on the oil film and allow it to be reduced in thickness by the escape of oil at the edges of the openings.

More than one builder of machinery has learned that an unbroken oil film is necessary for the best results in lubrication, and has accordingly made shaft bearings with solid boxes meeting accurately at the necessary joint between the box and cap, instead of being separated by the usual shims. Such a bearing will withstand a heavier load and take less oil than a bearing with gaps between the cap and box. Probably the worst form of bearing devised is the four-part box bearing common on steam engines, as it provides not less than four openings through which the oil film may be forced out by the revolution of the shaft.

Development of the Ringless Piston

Study of the action of the film of lubricating oil was the factor which led to the invention of the ring-



Longitudinal Section and Two Transverse Sections Showing How the New Piston Is Made

less piston, recently brought out by Paul G. Tismer. In the ordinary vertical gasoline motor a copious supply of oil is thrown up by the splash system into the cylinder bore, which ought to insure thorough lubrication. However, the piston is invariably provided with two or more sharp edged piston rings, bearing tightly

*Consulting Engineer, New York.

against the cylinder wall and operating effectively to scrape off the oil as fast as put on.

As a result, some of the oil is thrown up into the cylinder, and depositing on the walls and piston head, causes carbon trouble; while some of the oil is forced down into the crankcase, and with it more or less of the fuel, causing gradual thinning of the crank case oil by wasted gasoline which has passed by the piston rings. It is evident that the piston rings interfere greatly with the maintenance of a satisfactory oil film on the cylinder walls. If they are left off, and the grooves omitted, the piston trunk would slide indefinitely over the lubricating film without disturbing it, and there would not be a tendency to flip the oil upward and thus to cause carbon above the piston.

The only difficulty was to make a piston round and smooth with a reasonable uniform clearance between the piston diameter and the cylinder diameter. Engine pistons, however, have always been made with the sides thickened at the piston pin bosses, and a flat head cast integrally with the shell. As the piston frequently heats up suddenly in advance of the heating of the cylinder, it has been necessary to reduce the diameter of the upper end of the piston. The same sort of relieving had to be done around the piston barrel, where the piston pin bosses are located. Accordingly, no gas engine piston is round or of uniform diameter, either when it is new and cold, or when it is old or hot. It is necessary to separate the outer shell of the piston from the interior portion which holds the piston pin, and to have neither flanges nor flat head connected to the shell, if it is to remain round under the varying conditions of heat.

The Tismer ringless piston was accordingly worked out by carefully observing these principles. It consists of a piston center in which the piston pin is secured, provided with either a domed or a concave head, as required for different classes of engines. A thin shell of cast iron or other metal, threaded at the end only, is slipped over the piston center and screwed to it. The shell is truly cylindrical, and made with the customary difference of 0.002 or 0.003 in. between its diameter and the diameter of the cylinder. This working clearance space is, of course, occupied by the oil film.

So universal has been the use of piston rings that it is difficult for an experienced designer to imagine an engine operating without them. The first impulse is always to declare that the oil film will be blown out by the pressure of the exploding fuel. But the time element is so short that it is impossible for the oil film to move in the least under the momentary excessive pressure. Next is the thought that the piston will wear rapidly or cut. This is not the case in practice. There is, in fact, no reason to expect trouble, as is proved by the fact that marine engine slides run for thousands of miles without wear, and usually have no adjustment at all, and that the ringless piston in a gas engine is a similar slide running in a similar guide. Ringed pistons do wear and cut excessively, due to the scraping action of the rings in destroying the oil film, and to the relieving of the middle portion of the shell around the piston pins, so that the oil can escape, and the rapid collection of carbon in the ring spaces and between the piston and the cylinder wall as the engine operates. The ringless piston does not permit the formation of carbon, and does not cut.

The Tismer piston has been carefully tried and found satisfactory, to the extent of about one-third more mileage, less oil and no observable wear whatever. The inventor and associates, as the Ringless Piston Co., Inc., 103 Park Avenue, New York, are now adapting the design to the most popular types of automobiles, and will shortly enter the stationary engine field.

Novel Employment Scheme

To take care of men who otherwise would be out of work, a measure was inaugurated last fall by W. & I. Avery, Ltd., Soho Foundry, Birmingham, England, which gave partial employment to both skilled and semi-skilled men. This scheme involved continuing the work of the shop in certain departments after the usual hours, this late work being performed by the extra men.

Schedules of four or five hours per turn were prepared, the work being carried on from 6 to 10 p. m. the first four days of the week, from 5.30 to 10 p. m. on Friday and from 7 a. m. to noon on Saturday, making a total of 25½ hours. Payment for this work was based on the rates for night shift work and ex-service men received priority.

The owners report that the partial employment scheme was found very satisfactory, due largely to the fact that men of high skill, unable otherwise to find work, were willing to take on semi-skilled jobs at corresponding wages. It happened, however, in this particular case, where the work included the manufacture of automatic weighing and testing machines, that it was impossible to find enough skilled men for the final finishing operations to keep the enlarged force supplied with the preliminary work. This condition, of course, would not militate against the scheme as such, but did put a stop to it eventually in the Soho Foundry.

K. S. Magnet Steel

Remarkable for its high coercive force and strong residual magnetism, an alloy steel discovered in Japan in 1917 was named "K. S." after Baron K. Sumitomo, who liberally endowed the university where the discovery was made. The composition of this steel, which has undergone certain improvements since first discovered, includes from 0.4 to 0.8 per cent carbon, from 5 to 9 per cent tungsten, from 1.5 to 3 per cent chromium and from 30 to 40 per cent of cobalt.

As the alloy is brittle, it can be forged only with difficulty and after considerable practice. It is best quenched in oil at about 1750 deg. Fahr., and requires no heat treatment when used for permanent magnets. Its coercive force is reported at about three times that of the best tungsten steel, whose residual magnetism it also surpasses. This residual magnetism was not diminished after prolonged heating in boiling water. Its hysteresis loop has a very large area.

Quenching increases the hardness of the annealed steel—the Brinnell figure being thus raised from 444 to 652, and the Shore figure from 38 to 55. It is reported that the microstructure of the quenched and very hard steel is exceptionally fine. Specimens dropped on a concrete floor from a height of a yard or more lost magnetization only about 6 per cent. The steel is said to be suited for short magnets.

Coal Wages and Profits in England

In a written Parliamentary reply, the British Secretary of Mines has stated that the total amounts of wages and profits in the coal industry for the years 1913 and 1920 were estimated to be the following:

	1913	1920	Increase
Wages	£91,000,000	£264,721,000	190.9%
Profits	21,000,000	27,000,000	28.6%
Per cent of total:			
Wages	81.25	90.75	.....
Profits	18.75	9.25	.....
£ wages to each £ profits.	4.33	9.80	126.3%

During June, the Bessemer Limestone & Cement Co. shipped 95,100 bbl. of cement from its plant at Bessemer, Pa., establishing a new monthly record for shipments. The June production was at the annual rate of 1,140,000 bbl. Officials state that the company is well booked ahead and expects to sell capacity production this year.

The American Bridge Co., Ambridge, Pa., has been awarded the contract for the steel frame and other structural steel work on a six-story building at Youngstown, Ohio, to be erected by the Youngstown Terminal Building Co., the ground floor of which will be devoted to a passenger station for the Erie Railroad. The structure will require 420 tons of steel.

PIG IRON FROM BLACK SANDS

Results of Recent Experimental Work on the Pacific Coast

Some details are available of experimental work done on the Pacific Coast in the reduction of the iron sands which are found along the coast and on the banks and bottoms of most of the rivers flowing into the Pacific Ocean from Alaska to Southern California. The work was carried on by William Tyrrell, for the New Era Iron & Steel Corporation, at Sedro Woolley, Wash., and the description given below is furnished by James L. Avis, Jr., consulting engineer, Seattle, Wash.:

"In 1920 Mr. Tyrrell built a small blast furnace at Sedro Woolley of about 10 tons capacity. The furnace is 35 ft. high and 30 in. at the hearth inside. A 16-pipe hot blast stove and Root blower, operated by 20 hp. motor, furnish the blast. The top is closed by usual cone and bell. The shell is ½-in. plate; the bosh jacket above the tuyeres is 4 ft. 4 in. high of 1-in. cast steel and is spray cooled. There are four bronze tuyeres and water coolers with 3-in. blowpipe. The hot-stove is 30 ft. high, 5 ft. 6 in. in diameter, lined with firebrick, and has four rows of 4 6-in. pipes. A 15-in. bleeder leads off the downcomer. Two burners lead the gas to the hot stove. The plant is operated by electric power. There has been no trouble whatever with briquettes made from black sand. The binder is not only a powerful binding agent but is also a purifier, or scavenger, and since the materials of which the binder is composed are abundant in nature and consequently can be produced at small cost, there is no apparent reason why this iron should not be produced in unlimited quantities at greatly reduced cost of production, as there is no expensive and troublesome sintering or nodulizing. Chromium and titanium are eliminated by the use of this binder, which not only gives entirely satisfactory results in producing briquettes at a very small cost, with a yield of 1300 to 1400 lb. of iron to the ton of briquettes, but gives equally satisfactory results with any kind of fine ore, metals, concentrates or flue dust.

"It is highly probable this magnetic black sand was originally limonite, subsequently dehydrated. Of course briquetting has been attempted before, covering various materials, but never with satisfactory results until the process as developed by Mr. Tyrrell of the New Era Iron & Steel Corporation had been given a thorough tryout. Typical charges in the experimental blast furnace at Sedro Woolley comprised approximately 47 per cent briquettes, 47 per cent fuel and 5 per cent flux.

"Average analyses of the briquettes show 54 per cent Fe., 11 per cent TiO_2, 7 per cent SiO_2 and 0.018 per cent phosphorus. The metal produced was run into pigs of approximately 4 x 2½ in. section. Chemically these contain 2.75 per cent graphitic carbon, 0.98 per cent combined carbon, 0.60 per cent phosphorus, 0.08 per cent sulphur and 1.25 per cent silicon, these results being the average of numerous casts. When specimens have been polished and etched and examined at 150 diameters a very dense and uniform structure is seen. The distribution of graphite is very regular and is nodular rather than in the form of plates. The continuity of the metal is therefore not broken up and it is much stronger than the general run of commercial irons. In fact, physically this pig iron is denser, stronger and more readily machinable than the usual run of gray iron machine castings. It is not only tough but possesses great ductility, sharp corners standing hammering down without signs of chipping or cracking. Specimens machine readily, having been subjected successfully to boring, milling, thread-cutting and planing operations.

"The New Era Iron & Steel Corporation is not content with producing pig iron from black sands, but is continuing further experiments. During January and February of this year steel and gray iron castings were produced using varying percentages of this pig iron. For example electric furnace steel castings have been produced containing roughly 39 per cent open-hearth scrap, 44 per cent foundry scrap and 16 per cent black sand pig iron. Castings produced from this mix were clean, homogeneous, and when annealed machined satisfactorily. The carbon content ran 0.28 per cent and specimens gave an average of 69,000 lb. tensile strength. Another melt of steel containing 50 per cent of this pig and showing a carbon content of 0.69 per cent was formed into a small ingot of approximately 4 in. diameter and 30 in. long. This was forged to 1¼ in. square. At high forging temperature metal was quite resilient. A shaper tool was made from this metal, hardened and tempered, and gave a very satisfactory service. The tensile strength of this material averaged approximately 120,000 lb. per sq. in.

"A mixture in the cupola approximated 30 per cent commercial No. 1 Northern pig and 70 per cent black sand pig. This metal entered a locomotive driving wheel and its machining qualities and dense structure received high praise at the hands of the purchaser. Test bars gave a modulus of rupture of 61,000 lb. per sq. in.

"Referring again to the briquettes made from this black sand, the average compressive strength of these is 255 lb. per sq. in. higher than the compressive strength of coke. Compressive strength of briquettes increases as temperature rises and does not start to decrease until closely approaching fusing point. The binder used in these briquettes is of such a nature that certain objectionable elements contained in some fine ores and sands are satisfactorily reduced by contact with the furnace gases."

AT LOW EBB

Operations of Iron and Steel Plants Show Much Idle Capacity

Wheeling, W. Va., July 11.—The schedule of operations of the Wheeling Steel Corporation for this week reflects the very low ebb of current steel business. Plants of the Whitaker-Glessner Co. here, in Martins Ferry, Ohio, and Beech Bottom, W. Va., are idle and at the Portsmouth, Ohio, plant of this subsidiary of the Wheeling Steel Corporation, only three open hearth furnaces are in operation. At the latter plant there are ten open hearth furnaces. One lap weld pipe furnace and one butt-weld pipe furnace constitute the only activities of the Wheeling Steel & Iron Co., another subsidiary. LaBelle Iron Works, the other subsidiary, has four open hearth furnaces out of 11 at its Steubenville, Ohio, plant in operation while at this plant the blooming mill and No. 3 plate mill are operating one turn. All eight sheet mills at this plant are on, as well as two jobbing mills. At its Wheeling works LaBelle Iron Works has 22 of 120 cut nail machines in operation.

Plant Operations

The American Locomotive Co., Dunkirk, N. Y., has resumed operations at its local plant for the construction of 30 locomotives, five of which will be for Western railroads, and the rest for eastern lines. The men have been asked to accept another 15 per cent wage reduction, making a total cut of 30 per cent in wage scale.

The last of the furnaces of the Sloss-Sheffield Steel & Iron Co. to go on the idle list was blown out on June 29. This is the first time in the history of the company and its predecessors—covering more than 35 years—that the entire pig iron producing capacity has been idle.

The property of the Penn Iron & Steel Corporation, Plum Street, Lancaster, Pa., bankrupt, will be sold by the receivers, including plant and adjoining land, and machinery, equipment and supplies. John M. Groff is trustee in bankruptcy.

The Bostick Stove Co., of Lapeer, Mich., which has been operating only four days a week, is again working full time and with a small night force. The company has received a large order for carburetor castings.

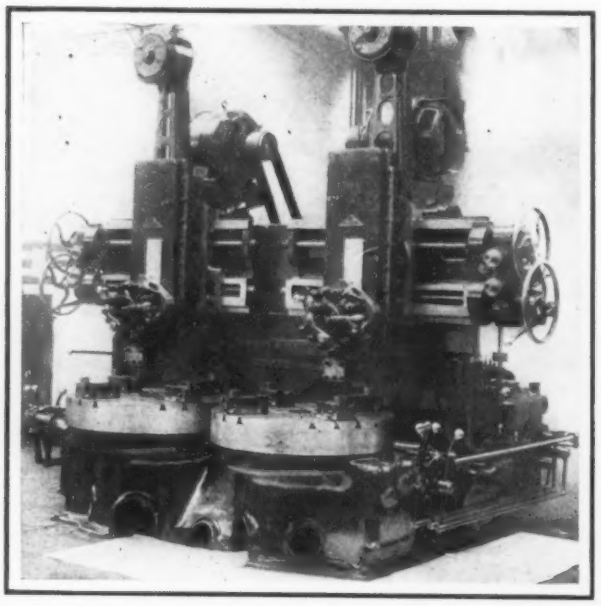
The Lansing Forge Co., Lansing, Mich., is now operating on a 60 per cent basis, and it is expected that this will be largely increased very shortly.

Duplex Boring and Turning Mill

A two-table, two-head boring and turning mill fitted with revolving turrets has been recently introduced by Webster & Bennett, Ltd., Coventry, England, and is said to supersede the single-table, two-head machine previously manufactured by that company.

The machines are furnished in two sizes with 20 in. and 42 in. tables. The drive is by means of single pulleys fitted with friction clutches and the speed change gears cannot be shifted until the clutch has been released. A patented reversing motion to the left hand table enables the operator when turning and surfacing, to work with the tool adjacent to the tool control levers. In the case of drilling, boring or reaming standard tools can be used and the table run in the reverse direction, a feature which is said to obviate the expense of left hand tools. Horizontal, vertical and angular feeds are provided and are positive reversible and interlocked. Rapid power traverse is immediately available.

A feed safety clutch is provided which is held in position by a spring and set to take the pressure exerted by the heaviest cut a tool will take. Pressure beyond this causes the clutch to slip preventing damage to the feed mechanism through accident or carelessness. Adjustable micrometer collars are provided, the position of which are controlled by spiral springs enabling the operator to readily make adjustment for setting tools and sizing the work by revolving the collars. Graduated trip dials are geared to the feed motion by means of friction clutches and are engaged or disengaged by knurled knobs at the front of the dial. When dial zero is opposite the pointer, the feed motion is automatically cut out.



The Left Hand Table Is Provided with a Patented Reversing Motion. Table runs clockwise for turning and anti-clockwise for boring

Ball thrusts are provided to all feed screws and worms. Turrets are balanced by compensating springs instead of weights and chains, tension being adjusted by revolving worm shaft on the top of the balance box. Other features include an improved tool binder for holding boring bars, etc., rigidly and without bruising; narrow guides to all slides; centralized control and reduction to two levers controlling the automatic feed and rapid traverse motion. Large bearing areas are provided to spindle and thrust ring, the down thrust being taken on a large diameter double-coned bearing. Filtered oil is supplied to gears and bearings by means of sight feed and other lubricators. For motor drive two motors are required each fitted with belt pulleys of size suitable to drive the 14 by 5½ in., machine pulleys at 400 r.p.m.

Alfred Herbert, Ltd., 50 Church Street, New York, is acting as sole distributer in the United States for the machines manufactured by Webster & Bennett, Ltd.

Course for Foremen

DETROIT, July 9.—The University of Michigan has opened a special conference course for factory foremen and superintendents, industrial executives and teachers, covering a four-weeks period between July 5 and 29. Only 20 students have been admitted. K. G. Smith, mechanical engineer, and Thomas Diamond, associate professor of industrial education, both practical shop men, are conducting the course. The main factors being considered are organization, capital, management and labor, to be studied from the viewpoints of relationships between foremen, management and workers: qualifications necessary for foremanship, basis upon which foremen should be selected, the factors of efficiency and contentment, the kind of training required, wages, problems of hiring and discharging men, and the advisability of shop committees. Under the head of materials and equipment, the class will study routing of materials, care of materials and equipment, working equipment to capacity, and recording machine efficiency.

New Ganister Crushing Plant in Pennsylvania

A ganister crushing plant has recently been completed by E. R. Baldridge & Co. at their Barree, Pa., quarries. This firm, with offices at Hollidaysburg, Pa., has been engaged in the ganister business since 1889. In addition to its use in the Bessemer, open-hearth electric ferrosilicon and silica brick practices, the ganister will be used for railroad ballast and road construction. The analysis shows 99 per cent silica, while tests made show crushing strength of 33,000 lb., or twice that of limestone and 50 per cent more than trap rock, both of which have been extensively used as railroad ballast.

The crusher installed is a special type, known as 5x, made by the Good Roads Machinery Co., Kennett Square, Pa. It has a return track elevator and a screen with four size screening surfaces, permitting the separation of the crushed ganister into commercial sizes for the various uses. The motive power is a fuel oil engine, of the Y type, made by the Fairbanks & Morse Co. Water is furnished by an automatic air pump, both for cooling and washing purposes.

The crude ganister is taken from near the top of an adjoining mountain and brought to the plant on a 2600 ft. inclined plane, with figure 8 sheaves for balancing or braking power. The quarry is about half a mile long and somewhat over 100 ft. high, showing a white ledge of silica which can be seen from a long distance. The cars used are of three tons capacity with end lift for use on an all-steel dumping table.

One of the Deposits of Crude Ganister near Barree, Pa.

The ganister is blasted from the ledge with dynamite and owing to the open seams, no drilling has been done as yet as the ledge opens up after each shot and permits dynamite to be inserted for further blasts. The capacity of the crushing plant is 300 tons daily, while 200 tons in addition can be shipped daily as crude rock, separate dumping tables being provided for each kind of material.

Racine Company Helps Unemployed Men

Plan to Prevent Suffering Among Those Formerly on Payroll Based on Definite Information as to Needs—Advance to Be Repaid

THE industrial depression has forced many manufacturers to curtail operations or to close their doors entirely, with the result that many employees have been thrown out of work. Reduced or suspended output is an expensive burden for any company. No fair-minded person could expect an industrial concern thus affected to add to its expenses by giving assistance to its idle employees, particularly in view of the fact that during the war and immediately after it, the wages of workmen in this country were the highest in history. Although it is generally true that the unemployed would not suffer if they had been provident during prosperity, the J. I. Case Threshing Machine Co., Racine, Wis., received reports early this year which seemed to indicate that many of its employees who had been laid off through no fault of theirs, and had family responsibilities, were in great need; in many instances, even of the necessities of life.

The company tried several methods of checking up the condition of these ex-employees, but without much success in ascertaining the actual facts. It was finally decided to send out a letter to every employee whose address the company possessed, who was on the payroll at August 1, 1920, cutting out the apparent transients. This letter requested each person to assist the company in locating the address and condition of any family man who was reported to be in need. Something over 2000 of these letters were mailed, and the result was very satisfactory, in that they produced fairly complete information on all men who had been laid off and were really in trouble. When the name of such a workman was reported, a competent, sympathetic investigation was made, and help was furnished by means of issuing to the family a local order for such things as were required from his regular grocer or source of supply. This local order authorizes the merchant to bill the company, attaching the local order, and to deliver the merchandise to the bearer. The local order is tied up with a signed memorandum whereby the man who gets this assistance agrees that the cost of the help given to him is an advance on future earnings and promises to pay back the amount of money involved in installments on each pay day, without interest.

The plan has been working out satisfactorily and the results of the company's investigations indicate that relatively few of its former employees were in particular need, although there were sufficient cases of want to justify having gone into the matter thoroughly. Up until June 20, approximately 75 families had received help under this plan. Below is the original letter which was sent out to employees, asking for assistance in locating family men who had been laid off, who were in need of help:

EMPLOYEES BENEFIT ASSOCIATION
OF THE
J. I. CASE THRESHING MACHINE CO.
INCORPORATED

Office of Superintendent

RACINE, WIS., Feb. 16, 1921.

Dear Sir:

Will you please help us locate any family man who has been laid off by the J. I. Case Threshing Machine Co. who is in need of help at this time? If you will send in any names and addresses and tell us what you know about the case, we will investigate promptly and see what can be done to relieve the situation. All information will be kept confidential.

This request is sent to you because your name appears on the August list of members of Employees Benefit Association.

Please used inclosed envelope.

J. I. CASE THRESHING MACHINE CO.

The following is the form which was filled out on the basis of an investigation of the reported case.

Date.....
Name ..... Address .....
Reported by .....
Nationality .....
Employed: From..... To..... Dept.....
Reason for leaving .....
Earnings when employed .....
Gross earnings at present.....
Other incomes .....
Other help: Source..... Amt. weekly.....
Family: Wife..... No. of children..... Sex.....
Ages.....
Disposition of case:
.....
.....
.....
.....
.....
Remarks:
.....
.....
.....

The ensuing form is the contract between the company and the employee, wherein the employee agrees to pay back the principal of advances made without interest:

RACINE, WIS., Feb. 16, 1921.

The J. I. Case Threshing Machine Co., on account of the previous creditable service of.....
.....
has this day issued to him Local Order No..... on ..... and agrees to pay the said merchant for the goods to be delivered on such order; and in consideration thereof the said ..... agrees to repay to the company said advance as soon as he can obtain work at ..... dollars per pay day without interest, and until such advance is finally repaid he does authorize any future employer to make such payments for him and deduct the same from his wages.
.....
.....
.....
.....
.....

J. I. CASE THRESHING MACHINE CO.,
By .....
And .....

Made in duplicate.

The following is the local order, in triplicate, which authorizes the employee to secure goods on the company's account from the local merchant:

Original
LOCAL ORDER
Date ..... 192..
To ..... No.....
.....
Please deliver to bearer .....
and charge to our account:
.....
.....
.....
.....

Itemized bill to cover must be sent to us at once with this order attached.

We shall issue no further orders on any merchant who shall charge for any item a price in excess of his regular price for such item on the day this order is filled.

EMPLOYEES BENEFIT ASSOCIATION OF
J. I. CASE THRESHING MACHINE CO.,
By .....

The Harvey Spring Co. and the Webster Electric Co., both of Racine, have adopted substantially the same plan which was introduced by the J. I. Case Threshing Machine Co. The J. I. Case Plow Works Co. has in operation a plan which is somewhat similar

LICENSING BUSINESS

To Embark on an Enterprise Involving Many People Should Require Knowledge of Economics

Urging that no man should be allowed to engage in business—at least, in business involving a capital larger than a certain fixed amount—without passing an examination and securing a license, as the doctor and the lawyer are now required to do, and that no one should be allowed to participate in making laws unless he has proved in some way his fitness to grasp conditions to meet which the laws are being made, Alvan T. Simonds, president Simonds Mfg. Co., Fitchburg, Mass., maker of saws, knives, files and steel, recently contributed a notable article to the *Boot and Shoe Recorder*.

Parallel in Medicine and Law

"The state," he wrote, "does not allow men to practice law or medicine without a license, but it allows any man who can secure the proper amount of capital or credit to enter upon a business venture involving not only himself and his future, but also the future welfare of thousands of others. When a company employing thirty thousand men and women fails because of poor management due to an ignorance of fundamental economic laws, something has happened that society should not allow."

He likened a great business enterprise to a great ship at sea. "The welfare of those on the ship is, to a large extent, determined by the skill and education of the captain and his assistants. If the ship meets stormy weather or unforeseen conditions, if accidents occur, the education and experience of those in charge must make it reasonably certain that the ship with its cargo and its passengers will come safely through.

"A great business carries the responsibility of the welfare and happiness of thousands of men, women and children in many homes. It seems almost criminal to allow such an organization to exist under the direction of those who know little or nothing of the laws which make for its safety. The number of failures occurring annually proves that this is a real and constantly recurring danger. One hundred and twenty thousand corporations in the United States in 1917 produced no profit. There were 1641 commercial failures in the United States in February, 1921, representing an indebtedness of over sixty million dollars."

What Is Required of Law Makers

As to lawmakers, he asks: "Is it not a rather curious attitude on the part of the public that requires all those who are to practise law to go through a long term of study and to pass difficult examinations before they are admitted to the bar and at the same time will send to our legislatures and to Congress to make laws men who have little or no knowledge of the great fundamental principles that underlie the prosperity of the country?"

It must be required that our business men and our law-makers shall have studied and have a fairly good knowledge of the laws of economics which deal with the material things which satisfy human desires. They must prove by examination or certification by some accepted school that they are prepared to undertake business without more than ordinary risk of misfortune to others, and therefore to society in general.

FOR THE OPEN SHOP

Manufacturers' Association of Northern Ohio Is Organized

Manufacturers of 12 central Ohio counties, at a meeting held recently at Bucyrus, formed an association to be known as the Manufacturers' Association of Northern Ohio. One of the main objects of the association is to co-operate in the open shop movement under the American plan of operating their plants. C. F. Michael, president Ohio Crane Co., Bucyrus, and of the Bucyrus Employers' Association, presided at the meeting and 60 companies in the district were represented and joined the association.

The objects of the new organization as outlined in the constitution are to promote the principles of fidelity among members, to promote and improve the opportunity of personal contact, to foster among the members the spirit of friendliness and good-will, to discuss the plans, ways and means of giving larger and better service to the customers of the members, to promote the use and sale of worthy merchandise manufactured by fellow members, to discuss questions of interest pertaining to the operation of manufacturing plants, to assist fellow members to dispose of surplus stocks, to provide the best possible working and living conditions for all employees, to promote principles of honesty, competent and efficient services for wages paid and to pay honest wages for such services rendered, to discountenance conditions which are not just or which will not allow a workman to earn a wage proportionate to his productive ability or capacity, to prevent interference with those who desire to work and give faithful service, to promote fair dealings between its members in the improvement of each other's employees, to assist fellow members in securing competent, loyal and desirable employees, to assist whenever possible to adjust industrial disturbances in the plants of fellow members, to obtain the open shop principle, to uphold the majesty of the morale and to increase the love for America's institutions and to promote the love and prosperity of humanity, and loyalty to God, home and country.

Officers were elected as follows: President, C. B. King, Marion Steam Shovel Co., Marion, Ohio; first vice-president, C. F. Michael; second vice-president, F. B. McMillen, Hydraulic Pressed Mfg. Co., Mt. Gilead, Ohio; third vice-president, T. R. Barnes, Barnes Mfg. Co., Mansfield; fourth vice-president, J. L. Clark, Hess-Clark Co., Ashland; secretary-treasurer, Fred B. Scherff, Marion. These officers and the following constitute the board of directors: J. L. Morrow, Burch Plow Works, Crestline; Z. E. Taylor, C. & G. Cooper Co., Mt. Vernon; H. C. France, Tiffin Wagon Works, Tiffin; A. B. Whitney, Whitney Tractor Co., Plymouth; E. B. Phillips, Champion Engineering Co., Kenton; J. S. Boyd, Galion Iron Works, Galion.

The next meeting will be held at the Westbrook Country Club, Mansfield, July 27.

Business Prospects at Seattle

SEATTLE, July 5.—During April, the brightest outlook of the year appeared from Manila. The jobbing and exporting trade looked for a brisk summer inquiry. That inquiry is still here, but the weakness in Philippine exchange and the extreme difficulty of financing exports caused exporters to withdraw in part from the contemporaneous selling market. Manila, it is known, needs heavy duty tools and machinery, but financial conditions have arisen which compel caution in closing on contracts. Japan is getting into better position to buy, and is to-day regarded as the strongest of the Oriental buyers. A rather brisk fall inquiry is expected from Japan.

The weakness in sheets, plates and pipe is due largely to the expected decline in transcontinental rail rates. Through devious sources jobbers have been advised that the Eastern or initial carriers on this haul have consented to reductions from $1.66 to $1.05, Pittsburgh, to Puget Sound common points. Buyers have learned of this attitude of mind of Eastern carriers who have stood out against any reductions in freight although transcontinental lines have taken the opposite view of conditions.

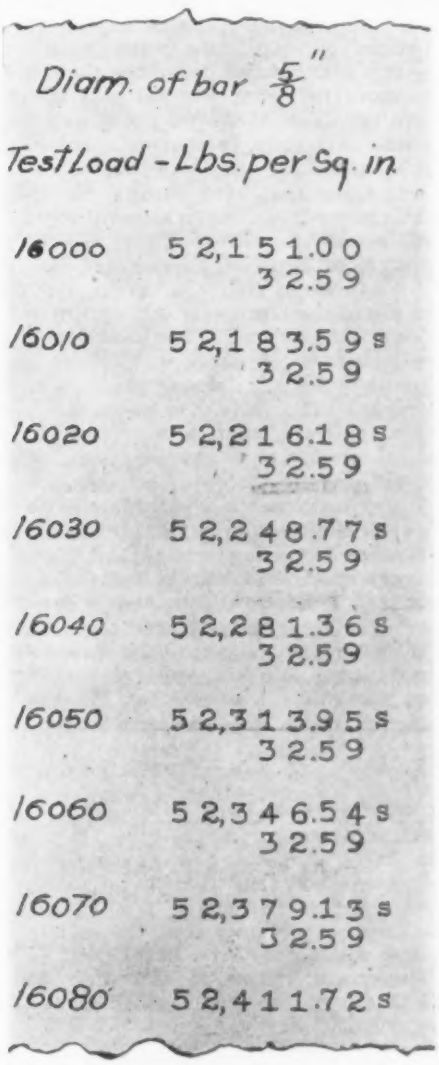
The Dravo-Doyle Co., Pittsburgh, has been awarded a contract for a new turbine engine for the municipal waterworks plant at Youngstown, Ohio, on its bid of $52,000.

TESTING MACHINE HELPS

Compiling Table to Translate Pounds on Test Bar into Pounds per Square Inch

BY R. W. ALLARD*

When a great number of bars of the same diameter are to be tested, as a part of routine work, a table relating machine-bar readings to unit stress is of particular value. The first step is the solving for pounds per square inch by computation for the even 1000 lb. both above and below the average range at which the particular bars break. Then determine the smallest increment that the testing machine will read. (This is commonly 10 lb.) Determine the value of this increment in lb. per sq. in. for the diameter of bar under test.



Mechanical Calculation of Pounds per Square Inch for Given Test Loads

Then with a recording adding machine put down the lb. per sq. in. for the whole thousands of pounds actual bar test load with which the table is to be started. Add in the value of the testing machine increment in lb. per sq. in. by means of the *sub total* key. The sub total sum is the value in lb. per sq. in. of the testing load for the thousands of pounds testing load with which the table was started, plus the smallest reading of the testing machine.

Repeat the adding of the increment value in lb. per sq. in. with the *sub total* key until tables have been made covering the range the bars commonly fall under. Print with drawing ink before the sub total figures the proper values of pounds of actual testing load. Cut the strips of paper from the adding machine and paste on a heavy piece of cardboard. Paint with white shellac.

If the smallest reading of the testing machine is 10 lb., the value of this reading in lb. per sq. in. must be added 100 times by means of the *sub total* key to make a table covering 1000 lb. test load. Insure the accuracy of the table by noting if the values of the even 1000 lb. of test load obtained by the use of the adding machine agree with the computed values for the even 1000 lb. test load.

Following is an example for test bars ⅝ in. in diameter. The value of a 1000-lb. test load in terms of lb. per sq. in. is 3259. The increment or smallest reading of the machine is 10 lb. There are then 100 increments for every 1000 lb. test load. The value of each increment is 32.59 lb. per sq. in.

To start the table with 16,000 lb. test load, the fiber stress is calculated at 52,151 lb. per sq. in. On the recording adding machine put down 52 151, and by means of the *sub total* key add 32.59 and get 52,183, which is the value in lb. per sq. in. for 16,010 lb. of test load. Continue adding 32.59 by means of the *sub total* key and note that after one hundred additions the answer is 55,410, which checks with the computed value for 17,000 lb. test load.

Example of computation:

Area of ⅝-in. round bar = 0.3068 square inch.

0.3068 : 1 (sq. in.) : : 16 000 (test load) : x (lb. per sq. in.)

$$x = \frac{16{,}000}{0.3068} = 52{,}151.$$

The slip of paper illustrates the use of the adding machine.

*Metallurgical engineer Northern Malleable Iron Co., St. Paul, Minn.

Lower Wages Expected

Mid-western bar iron makers who are members of the Western Bar Iron Association look for further declines in the price of bar iron from the average price of 2.30c. per lb. disclosed at the last settlement with the Amalgamated Association of Iron, Steel and Tin Workers to determine the tonnage rates to be paid boilers and finishers in the July-August period. Bar iron is reported offered in the East at 1.85c., Pittsburgh. Additional decline will mean, of course, further reductions in the rates paid workers in affected mills. At 2.30c. puddlers' wages dropped to $12.52 per ton from $13.76, paid in the May-June bi-monthly period. The current rate compares with a post-war peak of $18.76. At 1.85c, the puddling rate would be $10.26, on the old scale. In view of the possible downward revision of the base rates and the price of iron falling below 2c, a puddling rate of $9 per ton is predicted.

Active bar iron mills are still operating under the 1920-1921 agreement, under a clause which provides for its automatic continuance for 30 days following expiration of the old scale, upon failure to negotiate a new agreement.

Unemployment Increasing

Unemployment in Pennsylvania still is increasing according to the latest report of the State Department of Labor and Industry, despite the fact that a good many men are finding employment on the farms and in the construction of highways. Reports from the district offices of the departments give the number of unemployed in the different centers as follows: Altoona, 22,050; Erie, 14,635; Harrisburg, 14,245; Johnstown, 17,090; McKeesport, 5,850; New Kensington, 9,820; Philadelphia, 105,000; Philadelphia (women's office), 11,150; Pittsburgh, 48,100; Scranton, 20,250; Williamsport, 5,950.

The unorganized employees of the Mullins Body Corporation, Salem, Ohio, have called off the strike at the Mullins plant which was declared nearly four months ago, when the men refused to accept a 9-hr. working day. Although the union machinists at the plant have not called off the strike, the action of the unorganized employees has virtually ended the strike, as only about 25 machinists are still out.

RAILROAD FINANCES

Time Will Be Required to Work Out Plans for Relief of the Carriers

WASHINGTON, July 12.—The iron and steel trade, as well as financial circles, is greatly interested in tentative plans of the Secretary of the Treasury to advance funds to the railroads at an early date as a partial settlement of money owed by the Government to the carriers. This proposal has been miscalled a "loan," and has been estimated at $500,000,000. In point of fact, it is merely a furtherance of plans taken up recently by the Administration, looking to the expediting of payments in order that the railroads may settle obligations they owe and be in a position to make purchases of steel and other requirements which they need. Probably several weeks will be required before a conclusion of the plans can be brought about, although the misleading belief has been prevalent that it would be reached within a few days.

The financial relations between the carriers and the Government were set forth in THE IRON AGE of June 30, but in view of subsequent developments looking to the making of settlements with the railroads, they will be restated in a brief form.

The railroads owe the Government approximately $800,000,000 for expenditures made by the Railroad Administration in improving railroad property during Federal control. At the outset, there was a total of about $1,200,000,000 due the Government from the railroads because of the improvements and by reason of the purchase of car equipment. Something like $400,000,000 of that sum was funded by the Railroad Administration, which took notes of the railroads at 6 per cent for a period of 10 years, leaving about $800,000,000 due and unfunded.

Under the transportation act, it lies within the discretion of the President to fund part or all of this indebtedness. The suggestion that the $800,000,000 be funded for 10 or 15 years was made before the Senate Committee on Interstate Commerce at the railroad inquiry by President Samuel Rea of the Pennsylvania Railroad. Objection was made by him to the Railroad Administration deducting sums owed by the railroads to the Government in making final settlements. The point was made that this method of procedure deprived the carriers of cash which would aid them greatly in paying their bills for materials and supplies and in doing required maintenance work.

The matter was taken up with President Harding, who in turn referred it to Director-General Davis of the Railroad Administration, Secretary of the Treasury Mellon and Secretary of Commerce Hoover and in consequence negotiations were started with the railroad executives to work out a plan for funding part or all of the $800,000,000. If this is funded, it would mean that whatever amount the Government owes the railroads will be paid in cash as soon as settlement can be effected between each individual railroad and the Railroad Administration. It is roughly estimated that there is approximately $400,000,000 due the railroads from the Railroad Administration without taking into consideration the dispute involving the demand of the railroads for allowance for alleged inefficiency of labor during Federal control. There is also due the railroads approximately $200,000,000 under the guaranty during the six months following Federal control, making a total of practically $600,000,000 which may be paid to the railroads as soon as settlements are effected between the carriers and the Government.

It is explained that even though the $800,000,000 of railroad indebtedness to the Government is funded, it will still remain for each railroad and the Railroad Administration to agree on the amount due the given carriers. A number of railroads have not yet filed their claims for use of their property during Federal control, but in view of the desire of President Harding to expedite the settlement of claims as much as possible, it is hoped those which have not as yet been filed will be presented soon. The feeling is prevalent in the Administration, however, that some claims which have been filed are unduly high and should be scaled down.

Whatever may be done with regard to making sizable funds available to the railroads, it will, as indicated, require several weeks in all probability. The problem is no easy one, for the Railroad Administration in funding railroad indebtedness will have to obtain more cash than it has available, and it is not believed it will seek further appropriations than the estimate of $200,000,000 presented before the House Committee on Appropriations. It might, however, borrow the additional sum necessary from the War Finance Corporation, giving in return car trust certificates.

STILL STUDYING

Federal Trade Commission Examining Pittsburgh-Plus Case—An Interesting Possibility

WASHINGTON, July 12.—While no definite date has been set by the Federal Trade Commission to begin hearings in the so-called Pittsburgh-plus case, it is expected that they will start early in September. The commission continues study of the case and has had a conference with an attorney representing the United States Steel Corporation, with regard to the procedure to be followed and the more important points to be taken up. Chairman Houston Thompson, and Harle Steinhauer, who has been assigned as trial attorney for the commission, have gone to Duluth, Minn., in connection with gathering data, although the trip of the chairman is not entirely of an official character, inasmuch as he has gone on a vacation of two months which will end the first of September.

It is interesting to observe that hearings in the case hardly will be before the term of one of the members of the commission, John Garland Pollard, expires. He goes out of office on Sept. 20. With Commissioners Thompson and Nugent he voted for the issuance of a complaint as against the opposing votes of Commissioners Gaskill and Murdock. Naturally, there now is speculation as to who will be appointed as a successor to Mr. Pollard and what his attitude on the case may be. It is assumed that, like others who preceded him but who were not members when previous hearings were held, he will go over the voluminous records before passing upon the case. If another vote should be taken and the new appointee oppose the complaint apparently the commission would reverse itself for the second time and in this instance the case would be dropped, granting that the remaining members of the commission are unchanged as to their views. There is, of course, no assurance that another vote will be taken, but the possibilities of the situation have created interest.

Reports are heard that Judge Vernon Van Fleet of Elkhart, Ind., now associated with the Department of Justice in connection with work looking to its more economical operation, will be appointed as the successor to Commissioner Pollard. Judge Van Fleet was in charge of the Harding campaign in Indiana, before the Republican convention.

Railroads Add to Their Forces

CHICAGO, July 9.—The Chicago, Burlington & Quincy has added 600 men to its rip track forces during the past week. The Minneapolis, St. Paul & Sault Ste. Marie has put 3600 men back to work in the bridge, carpenter and other shops. The first deviation from the policy of reducing forces to a minimum, under which the Atchison, Topeka & Santa Fe has been operating for months, was the return of 100 employees in the road's car repair shops at Topeka, Kan., last Monday.

The United Engineering & Foundry Co., Pittsburgh, is about to begin publication of a plant paper for its employees, the first issue to appear in July.

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Steel As An Index

It is just as true now as it was one year ago that the steel industry cannot long maintain a rate of operation either far above or far below the general percentage of business activity in the country. One year ago, when signs of reaction in other lines were increasing, steel producers were straining every nerve to meet the demands upon them and were quite willing to believe that for many months they would be called on to deliver all the steel they could turn out. Three months later, when the inflow of iron and steel orders was suddenly checked, almost overnight, the interdependence of all members of the industrial body was recognized again.

That demand upon the country's steel mills should have fallen to the starveling rate of 20 to 25 per cent is the feature of the industrial situation upon which the attention of both producers and consumers has been riveted of late. It is well known that the country's consumption has not fallen to such a low rate. All other measurements ordinarily applied to business—bank clearings, car loadings and the like—indicate general activity in manufacture and trade far above that which is the rule at blast furnaces, steel plants and rolling mills. The interchange of rolled steel by jobbers, in the liquidation of their stocks, the resale of rolling-mill products by manufacturing consumers of such steel, and the shipment of material from one plant to another, in the case of large corporations, to avoid sending fresh orders to the mill, are examples of the policy followed out in every quarter. The outcome of it all will be, one day, a country bare of steel to a degree that has not been paralleled.

Underlying all this effort to use up every pound of steel in sight, or to turn it into money, is the palpable intention to replace it at an indefinite later day, when the process of deflation has run its course. And such replacement, together with new buying that will not be for stock replacement, may actually start at a time when in the opinion of many any real improvement is far in the future. Over against the time needed for further readjustments that must precede the return of health to business, there must be a reckoning sooner or later with the fact that steel mill operations, as was the case for nearly half of 1920, are quite at variance with other indices of trade.

Past and Present Steel Prices

Recent reductions having placed steel prices within easily measurable distance of their pre-war levels, there is more disposition to make comparisons. Using as a basis the prices formally announced within the past ten days, the advances over the ten-year pre-war average are as follows in representative products:

	Per Cent
Billets	33
Merchant bars	34
Plates	34
Shapes	33
Black sheets	57
Galvanized sheets	35
Wire nails	52

The advances over pre-war averages in billets and the three heavy rolled products, bars, shapes and plates, are remarkably close, the increase being almost precisely one-third. Black sheets stand out with a heavier advance, and for this divergence several influences may be assigned. The sheet market before the war was an especially competitive one, and wage advances have fallen with particular heaviness upon sheets. That galvanized sheets show a smaller percentage advance is partly a matter of arithmetic. The average spread between black and galvanized sheets before the war was about 1.05 cents, while the present spread, with black quoted at 3.50 cents and galvanized at 4.50 cents, is 1 cent. Wage rates in galvanizing shops are much higher than before the war, but zinc is much cheaper, its present price of 4.35 cents comparing with an average of 5.64 cents in the ten pre-war years, showing a decline of 23 per cent.

Of all the familiar steel mill products wire nails have been most often mentioned of late as the victim of high labor costs. The new $2.75 price is regarded by producers as a very low one, yet it is 52 per cent above the average price quoted

in THE IRON AGE from 1904 to 1913. This comparison, moreover, being simply of the base price, does not take into account the change in the card of extras. Making allowance for that, the advance on a typical specification would be between 55 and 60 per cent.

There are those who regard pre-war averages as useful only for comparisons in a very general sense. It is pointed out that mills did not necessarily receive the average prices commonly cited, since as a matter of fact these are simply averages of open market quotations from week to week for comparatively early deliveries. The mills did not sell much at the lowest prices, but on the other hand they did not sell much at the top prices. It may be cited in favor of pre-war averages that if any steel commodity be taken it will be found that the ten-year average, 1904 to 1913 inclusive, the five-year average, 1909 to 1913 inclusive, and the average for the single year 1913 all hang pretty well together, and that is suggestive that "there must be something in it."

On the other hand it may be argued that we are in a period of depression, when rules do not always work. In the spring of 1909, in the depression following the panic of 1907, the mills might have demanded the average prices of the preceding ten years, but they did not get them within 20 per cent, for a time, and as to the ten-year pre-war average now often cited for comparison, at the end of 1914 the mills were not getting that average within 25 per cent.

If comparison be sought with pre-war low points in steel prices, allowances must certainly be made for ineradicable increases in cost, and in that list wages and freight rates will necessarily be prominent for a long time.

"Cancelitis" Then and Now

With the customers of the steel mills calling for deliveries of steel at a rate equal to no more than about 20 per cent of the mill capacity, the generally accepted view is that the customers are afflicted with stocks, either of steel or of commodities they have made from steel. It is insisted that the actual requirements of the country cannot be at as low an ebb as are mill operations. In such conditions the question is asked, how or when did these stocks accumulate? Steel was so scarce until the fall of 1920 that no one was in position to accumulate stocks, whether or not he had the desire. The stocks must have been accumulated after steel ceased being scarce.

One readily recalls that at just about the time that steel ceased being scarce there was in industry and business generally much canceling of contracts or holding up of deliveries. It was much talked about and financial and other writers discoursed upon it. They cried out about the epidemic of a new disease, which they called "cancelitis." Everything was being ruined by this blight, and the inference was that if only people would not cancel, business would go right along. Serious losses in prospective profits, in other words, might be averted.

Now we have a new aspect of affairs, that of the steel industry suffering from a lack of orders, because the customers have stocks. In other words, they did not cancel enough tonnage or did not cancel soon enough.

What would have been the condition to-day if in industry generally there had been none of this canceling? On general principles, it is a bad thing to cancel a contract. A contract should be lived up to. But it is certainly an accepted adage that two wrongs do not make a right. Why was not the outcry against the making of these contracts instead of against their being canceled? Undoubtedly if everything were placed under contract for a stated period all would be well, the people to contract with their bakers for bread a year ahead (having at the same time contracts for steady employment), the bakers to contract with the millers, the millers with the farmers, the farmers with the agricultural implement dealers, the dealers with the implement factories, the factories with the steel mills, the steel mills with their employees, and so clear around the circle.

That, however, was not done. There were missing links in the chain. There are different practices in different lines of business. Sometimes there are different practices among the members of the same line of trade, and sometimes a whole trade makes a mistake in judgment. Some business men contract for their raw materials farther ahead than the period for which they sell their products, some for the same period, some for less. There is no uniform practice. Nearly always there is a time when somebody is getting caught, either with obligations to take more material than he needs or with greater needs than he has covered.

It was notable that the steel makers did not complain as loudly about "cancelitis" as did many others. It has been more or less of a custom with steel manufacturers to adjust matters with their customers. The practice has not been universal, but it has been common. Some of the steel trade practices have been described as extremely unbusinesslike, yet an outstanding fact has been that in the long run both the steel manufacturers and their customers succeed. It is not clear that if, say in the past quarter century, there had been no accommodation of this sort either party would have been more successful. Contract cancellation, in the abstract, is absolutely wrong, but the spirit of the contract, the history of the relations of the parties to the contract, and the surrounding circumstances are entitled to some consideration.

Not a little has been said since the war about high sulphur cast-iron scrap and its menace to the iron foundry. Advocacy of the use of the basic electric furnace in conjunction with the cupola as a refiner of such iron has been frequent. This method has demonstrated its success in more than one case. The principal objection is its cost and the fact that not many foundries can avail themselves of the use of such a furnace. The employment of lime, however, in the regular cupola charge as a successful eliminator of a certain amount of sulphur is recommended by A. C. Porter in an article in the *Foundry*. By basing the lime charge somewhat on the practice followed in burdening a blast furnace, the author claims that

he has demonstrated by experimental runs that a sulphur content of 0.139 per cent in the original metal charged was reduced to 0.093 per cent, the manganese at the same time increasing from 0.54 per cent to 0.71 per cent. The suggestion is valuable and may prove by further experimentation to be worthy of general adoption. The author holds that the high sulphur menace can be overcome by this practice or at least be held under sufficient control to prevent the troubles that would be apt to come.

Shipbuilding and Steel

In the first half of 1919 there were under construction in American shipyards 4,185,523 gross tons of vessels, mostly cargo. This year the figure is 1,102,672 gross tons. While it is not possible to assign accurately any definite ratio between the tonnage measurement of a ship and the quantity of steel and iron going into its make-up, yet a figure of one ton of such materials to each two tons of measurement will provide an approximate index of the shipbuilding demand upon the iron and steel industry. And perhaps three-fourths of this demand, expressed in tons, will be represented in plates and shapes.

Hence a loss of 3,000,000 tons measurement of shipping being built may be translated into 1,500,000 tons of iron and steel, including more than 1,100,000 tons of plates and shapes. This represents, to a certain degree of approximation, the loss which the steel industry is sustaining through the drastic decline in shipbuilding following the completion of the Shipping Board's abridged program. More than half of the tonnage now building consists of tankers for the conveyance of oil, and considerably less than 500,000 tons will carry the miscellaneous cargo of the liner or tramp. With the approaching completion of the tanker program, still further curtailment may be anticipated.

Concerning Cupola "Semi-Steel"

An effort is being made by the American Society for Testing Materials, through its committee on cast iron, to do away with the use of the term "semi-steel." The definite recommendation was made by this committee at the society's convention two weeks ago that the name "high test" iron be substituted. Gray-iron castings in which steel scrap has been used in the charge do not approach steel in character or properties, and the name "semi-steel" is held to be misleading. The committee states that the steel scrap additions result in an iron higher in strength, but points out that the improvement is one of degree only, and cites other objections. The society's committee is now formulating specifications to fit the term "high test" iron or whatever is finally decided upon.

Those in the foundry industry who have been disposed to regard "semi-steel" as already established in commercial nomenclature have contended that steel scrap is the best medium through which to give to cast iron increased transverse and tensile strength, as well as toughness, along with machinability. They hold that the manufacture of semi-steel castings has been carried on for so long that producers and users are alike thoroughly familiar with the real character of the metal and that there is no misunderstanding concerning it. The proposal has been made, indeed, that the American Foundrymen's Association make the status of such castings more definite by laying down requirements for castings produced by using steel in the cupola mixture. For light castings, 15 to 20 per cent of steel has been proposed, giving tensile strength of 32,000 pounds as a minimum, and for heavy castings a range of 30 to 40 per cent steel and 37,000 pounds tensile strength. A certain sanction, it is contended, was given the term which the Testing Society's committee seeks to abolish, by the issuance of a Government specification for "semi-steel" shells during the war, and it will be recalled that one important company manufactured thousands of tons of such shells for the American Army.

In whatever action is taken toward clearing up the status of semi-steel castings the committee of the American Society for Testing Materials might well proceed in coöperation with a committee from the American Foundrymen's Association, since it would rest largely with the latter organization to give practical effect to any decision that might be reached.

CORRESPONDENCE

Efficient Journal Bearings

To the Editor: Careful reading of the article under the above title, in your issue of June 16, page 1605, thoroughly convinces me that a great injustice is done to all manufacturers of ball and roller bearings, excepting possibly the one responsible for the "monograph."

For a number of years ball and roller bearing manufacturers have been conducting an educational campaign in the use of anti-friction bearings in general. One phase of this campaign has caused thousands of dollars to be expended in the trade papers to acquaint engineers, designers, equipment users and others with facts—not theory—with engineering standards established upon practical applications and experience. An article of the nature appearing in your June 16 issue does little except to contradict many established facts and practices. Furthermore, manufacturers of recognized anti-friction bearing designs are discredited.

Many of the statements appearing in this article are absolutely unfounded and are directly critical of features employed in the design of roller bearings manufactured by the writer's company. Other statements are in direct contradiction of established characteristics of the Hyatt bearing, manufactured by the Hyatt Roller Bearing Co., and proved successful by reason of its wide application.

Furthermore, this so-called "monograph" does a great injustice to manufacturers of ball bearings, as many statements seriously reflect upon standards established and proved correct by years of experience and millions of applications. C. F. SUCCOP,

General manager American Roller Bearing Co.
Pittsburgh, June 20.

Will Sell Black Sheets

WASHINGTON, July 12.—The Bureau of Supplies and Accounts, Navy Department, has issued specifications calling for bids on approximately 1200 tons of black sheets of various dimensions for its different navy yards. The bids are to be received up to August 5.

Extent of Liquidation in Finished Steel Products

In bars, plates, shapes and sheets, from 80 to 95 per cent of the excess of 1917 peak prices over the 10-year pre-war average has been wiped out. In beams, for instance, where the excess was 3.00c., it is now only 0.50c., a reduction of 83 1/3 per cent. The "Composite" is the simple average of the seven products quoted. These products represent approximately 85 per cent of the annual output of finished steel in the United States.

	Cents Per Pound				1917 Peak Exceeded 10-Year Pre-War by	July 12, 1921, Exceeds 10-Year Pre-War by	Extent of Liquidation from 1917 Peak
	10-Year Pre-War	Peak July, 1917	Industrial Board Mar., 1919	July 12, 1921			
Bars	1.42	4.50	2.35	1.90	217%	34%	84½%
Plates	1.488	9.00	2.65	1.90	505%	28%	94½%
Beams	1.50	4.50	2.45	2.00	200%	33%	83%
Rails	1.34	1.79*	2.10	2.10	34%	57%	....
Sheets	2.226	8.50	4.35	3.50	282%	57%	80%
Wire	1.62	3.95	3.00	2.50	144%	54%	62%
Pipe	2.194	5.10	4.25	3.55	132%	71%	46½%
Composite	1.684	5.334	3.021	2.493	217%	48%	82%

*Reached 2.545c., which was maintained all through 1918; again in 1920.

New Secretary of Mining and Metallurgical Engineers

Frederick Fraley Sharpless, who has been selected by the directors of the American Institute of Mining and Metallurgical Engineers to succeed Bradley Stoughton as secretary of the institute, was for several years secretary of the Mining and Metallurgical Society of America. He graduated in chemistry from the University of Michigan and from 1888 to 1892 was instructor in metallurgy in the Michigan School of Mines at Houghton. Later he opened a chemical laboratory in Minneapolis in association with Horace V. Winchell, and then followed some years of valuable experience at Western mines, one engagement being as manager of the California Copper Co. From 1900 to 1912 Mr. Sharpless's work was varied, including much exploring, reporting and operating in British Columbia, Alaska, Mexico and South America, chiefly for English investors. The past eight years have been occupied with consulting work, with offices in New York. Mr. Sharpless is a native of West Chester, Pa., coming of Quaker stock, and is 55 years of age. His membership in the mining institute dates from 1889.

F. F. SHARPLESS

Electric Furnace Sales

The Electric Furnace Co., Alliance, Ohio, reports more orders for its Baily electric furnaces in June than in any single month in the last two years. These orders include standard brass melting units, car furnaces for steel plant purposes and a special electric enameling equipment. Most of the sales were made to concerns not particularly busy at the present time, but who purchased this equipment with a belief that by the time the furnaces were installed and ready for operation business would be such as to justify the present expenditure. The Empire Brass Mfg. Co., Ltd., London, Ont., bought the fifth Baily furnace sold in Canada during the past year. The Mueller Metals Co., Decatur, Ill., ordered three 105-kw. furnaces each with 1500-2000-lb. hearth capacity. The Ingram Richardson Mfg. Co., Beaver Falls, Pa., bought a 600-kw. electric enameling furnace, a rotating car type furnace arranged to travel on a circular platform 60 ft. in diameter. The equipment will have a heating capacity of 44 tons of material per day.

Not a Common Carrier

WASHINGTON, July 12.—In a decision handed down last Friday the Interstate Commerce Commission held that the Allegheny & South Side Railway Co., the stock of which is owned by the Oliver Iron & Steel Co., is not a common carrier and directed it to cancel its tariffs on file with the commission.

The Blair Engineering Co. announces that Arthur G. McKee & Co., 2422 Euclid Avenue, Cleveland, will hereafter have the exclusive right to manufacture and sell all special open-hearth equipment previously handled by the Blair company. This includes Blair valves, ports and slag-pockets, all of which are well known to operators of open-hearth furnaces. Arthur G. McKee & Co. will also have the exclusive right to manufacture and sell the new Eglar type furnace which has recently been put into operation. Results already obtained in this furnace are said to prove that this development will greatly increase the output of open-hearth furnaces, with a considerable increase in fuel economy.

The Iron Age and Its Readers

Figures from the United States Census Office afford the means of determining how largely THE IRON AGE covers the manufacturing interests of the United States. The 34,536 plants in those machinery and allied fields which are served by THE IRON AGE turned out, during 1919, products to a total value of $19,516,888,000, or an average per plant of $565,000. The remaining plants of all descriptions and sizes, more than 250,000 in number, showed an average product of only $170,000 per plant. Thus the average plant in our field is 3 1/3 times as large in its operations as the average plant outside our field.

Leaving out the plants employing fewer than 50 men, the remaining manufacturing establishments in all branches of industry in the country number about 25,200. These include the whole range—textile mills and candy factories as well as factories using iron and steel in producing their product. More than half of the entire 25,200 large plants in American industry, however, are reached by THE IRON AGE.

GOVERNMENT BUYING

General Dawes Planning for Co-ordination in Buying—Selling Surplus Steel

WASHINGTON, July 12.—Steps looking to the co-ordination of all Government purchases, wherever practical, are believed to be in the mind of Director of the Budget Charles G. Dawes, as the result of an order he issued last Friday. The order itself primarily deals with sales and purchases of material held by the different Government departments, but it is thought ultimately the plan will be expanded to as to include all purchases. In his order to heads of Government departments and independent establishments, General Dawes said:

> In order to conserve to the utmost the expenditure of Government funds and to save loss by deterioration in storage of surplus property now available for disposal by the several executive departments of the Government, it is directed that whenever advertisements for bids are contemplated, before such advertisements are made public, copies of the same in the exact form in which it is intended they shall be published be sent to the surplus property division or corresponding agency, of each of the executive departments.
>
> Each department advertising material for sale shall in like manner inform every other department prior to the advertisement of the exact nature of the advertisement which it is proposed to publish.
>
> In both cases, copies will be sent to the chairman of the Interdepartmental Board, which is hereby charged with co-ordinating these activities.

In substance, this order itself requires that the different Government departments make known to each other the surplus property they have on hand with a view to disposing of it to Government sources which may need such requirements as are already on hand without going outside to purchase the material. It will remain for the chairman of the Interdepartmental Board to co-ordinate the necessary activities after getting the information requested by the Director of the Budget. The proposal also is looked upon as a means of preventing Government departments from bidding against each other in the purchase of supplies and to give more uniformity to prices of materials bought by the Government. It is doubted that steel and machinery supplies on hand as surplus will figure much in the order, although the setting up of a co-ordinated buying agency for the Government would do so.

Should a centralized system for purchases be organized it is pointed out that it could be helpful to the steel trade, as well as to the Government, by standardization of specifications, perhaps adopting those of the American Society for Testing Materials, on the more ordinary steel products; of forms as to liquidated damages, and requirements for giving bonds, certified checks, etc. It is recognized by Government authorities that there are limits of a definite character to the idea of standardization and some steel supplies, such as many required by the War and Navy Departments, would not yield to such a system, but on the more common products such a plan could be devised and bidders annoyed by less red tape. Moreover, they would know readily where to go for information. Under present conditions the latter is often impossible, for small producers who do not maintain close connection with Government sources in the way of getting information as to activities for purchases.

All Sales Stopped

All sales of surplus material, including steel, have been stopped by the United States Shipping Board and it has begun a physical inventory of its surplus property under the direction of Col. R. H. Montgomery, of the New York accounting firm of Lybrand, Ross & Montgomery. In the meantime, the board has rejected all bids that were received recently on 26,270 tons of steel, and while it is understood bids will be received on the 110,000 tons at Hog Island, Pa., up to July 26, it is apparent that none of these tenders will be accepted, at least not in the near future.

The board is undecided as to what policy will be followed in disposing of its surplus property and will not know until the inventory under way has been completed and the results studied. Altogether, it is estimated that the board has practically 300,000 tons of surplus steel on hand. There is a sentiment in favor of selling it at once in view of the fact that it is exposed to the weather and deteriorating and represents considerable cost on the investment. There also is another opinion to the effect that if material is held until the iron and steel market resumes activity and strength, the surplus could be sold at a better figure than could be obtained under existing conditions.

TARIFF DISCUSSION

Congressman Tilson Refers to Steel Industry—Valuation Plan Explained

WASHINGTON, July 12.—Defense of the metal schedule carried in the permanent tariff bill was made in the course of general debate in the House yesterday afternoon by Representative John Q. Tilson, chairman of the subcommittee who has charge of that schedule. While his speech largely consisted of the points made in his report, Mr. Tilson took occasion to answer criticisms made in the minority report on the bill with regard to sinister influence exerted by business or business men toward preparation of the measure.

"Of course no member signing the minority views believes for a moment that any sinister or undue influences were exerted by either big or little business or business men or had any effect whatever upon the preparation of this bill, but they had to say something," declared Mr. Tilson. "No one who signed these views would say, and attempt to keep a straight face, that he believed any member of the majority of the committee was any less honest or patriotic than himself, but something had to be said. It speaks volumes for the merits of this bill that it was found necessary to indulge in such insincere accusations of dishonesty against honorable colleagues in order to be able to say something derogatory to the bill."

It was stated by Mr. Tilson that what the Ways and Means Committee had in mind in preparation of the bill was not the rates carried in the Payne-Aldrich or the Underwood-Simmons or any other bill, but what rates are needed to preserve and cause the continuance of the industries of this country.

Non-ferrous Products

It is understood that one of the principal amendments will relate to paragraph 378, which covers copper and brass wire and other non-ferrous products. It is proposed to eliminate all reference to wire and in removing these classes of wire from this special classification to allow them automatically to be covered in the basket clause, paragraph 393, which assesses ad valorem duties of 45 and 35 per cent as compared with specific duties ranging from 1½c. to 12c. per lb. contained in paragraph 378.

The latter paragraph, if the proposed amendment is made, will read as follows:

> Copper in rolls, rods, or sheets, 2½c. per lb.; copper engravers' plates, not ground, and seamless copper tubes and tubes, 7c. per lb.; copper engravers' plates, ground, and brazed copper tubes, 11c. per lb.; brass rods, sheet brass, brass plates, bars and strips, Muntz or yellow metal sheets, sheathing, bolts, piston rods, and shafting, 4c. per lb.; seamless brass tubes and tubing, 8c. per lb.; brazed brass tubes, brass angles and channels, 12c. per lb.; bronze rods and sheets, 4c. per lb.; bronze tubes, 8c. per lb.

Chairman Fordney's Address

Reports formally made on the House bill contained nothing of a particularly illuminating character over and above what had been said previously by different members. They indicate, however, as do speeches in the House, that the American valuation plan is one of the chief features of the measure causing discussion. Chairman Fordney in an address last Thursday in supporting this plan gave several examples of how it would work, first pointing out its necessity because of the wide difference in international exchange.

Unions Make Important Concessions

Agreement Reached at Columbus Conference of Sheet and Tin Plate Manufacturers and Representatives of Amalgamated Association

YOUNGSTOWN, OHIO, July 12.—The Western Bar Iron Association and the Amalgamated Association of Iron, Steel and Tin Workers will meet the last week in July at an adjourned conference to negotiate the 1921-1922 wage agreement. The place of meeting is still undetermined. At the annual conference held early in June at Atlantic City, representatives of both associations failed to agree. The 1920-21 agreement expired June 30, but mills are operating under a clause which provides for their automatic continuance for 30 days.

An agreement was reached July 9 at Columbus, Ohio, between sheet and tinplate manufacturers subscribing to the Amalgamated scale and representatives of the employees, following sessions which began on July 6. At times it appeared as if the conference would result in disagreement. Union sheet and tinplate mills suspended June 30 upon expiration of the old contract.

Manufacturers insisted upon reductions and changes in working conditions which would effect economies in production so as to enable them to compete with other makers operating independently of the Amalgamated Association. It was pointed out to representatives of the employees that unless such economies could be effected in the agreement, manufacturers would be forced, of necessity, to take other steps to reduce production costs.

Reduction of 10 Per Cent

An average saving of approximately 10 per cent in production costs is effected under the terms of the new contract, though the economy in particular divisions varies.

Employees attempted to retain the gains which they had made during the war and conceded reductions and changes only after bitter contest.

The most important concession gained by manufacturers was in the tin mill scale. At the conference last year, employers granted an increase in the rate of advance in the tonnage rate from 1 per cent to 1⅛ per cent for each member of the crew on each five cents advance in the selling price of tinplate above the base of $3.50 per box of 100-lb. of coke prime sheets. The rate of increase was again restored to 1 per cent in the new contract.

Similarly, in the tin house scale, the rate of advance for tinners, redippers and risers was last year advanced to three-fourths of 1 per cent for each 5c. increase in the selling price above the $3.50 base, from one-half of 1 per cent. This year the old rate was restored.

During the May-June period, the tonnage rate for tin mill employees was based on a selling price of $6.50 per base box of plates, or $3 above base. In consequence of the reduction in the rate of advance from 1⅛ per cent to 1 per cent, tin mill workers would sustain an actual reduction in the current tonnage rate of 7½ per cent. The actual loss to workers will, of course, vary with the selling price of tin plate.

Charges Pared Down

A number of extra charges in the tin plate scale were also pared down. For instance, the old agreement provided that "all sheets or black plate 14½ ft. square or over, when finished in six or more sheets to the pack, should be paid for at the following rates above the tinplate scale—10 per cent extra on No. 26 gage and heavier and 20 per cent for all lighter gages, up to and including No. 32 gage; and for all sheets or black plate 15½ sq. ft. and over, finished in fours, the same percentage shall apply." In the new scale, this is reduced to 10 per cent instead of 20.

Manufacturers conceded an extra hand on tin mill crews, with a revision of work and distribution of it among the various members of the crew, subject to local agreement.

The sheet mill base scale is not materially different in the new agreement than in the old, though changes have been brought about in working conditions which manufacturers say will produce savings in costs. Employers contended for the elimination of an extra man added to sheet mill crews during the war, and a lively contest developed over this issue. It was finally compromised, by eliminating the extra helper six months in the year and providing for his employment during the six war months from April to October.

In both the sheet and tinplate agreements, the catcher is reduced to the status of the rougher, the change having previously been made under the stress of war conditions. Both are on a par in the new wage scale.

New Classification

Manufacturers secured the consent of the Amalgamated Association for another classification on jobbing mills, the purpose being to rearrange positions to bring about reductions in costs. This reclassification will be made sometime between the middle of July and Sept. 1.

When due to shortage of men, the limit of time for sheet, jobbing mill or tin mill crews to remain in the mill without working was extended from one hour to 1½ hours. Employers contended that the extra man on sheet mill crews increased the cost of production from $1.50 to $2 per ton above that of non-union competitors.

President M. F. Tighe of the Amalgamated Association presided over the adjourned conference. Many representatives of the manufacturers left Friday evening with the understanding that the employers would offer compromises on Saturday that would break the deadlock.

The original conference at Atlantic City started June 6 and terminated June 13, without agreement.

The bimonthly examination of sales sheets in the sheet and tinplate divisions, ordinarily held on the tenth of every second month, was delayed this month on account of the Columbus conference. However, sales sheets have been sent in by a majority of the mills and the settlement will probably be effected this week. Average sales prices are sent by the subscribing mills to James H. Nutt, secretary of the Western Sheet and Tin Plate Manufacturers' Association, who tabulates them and represents employers at the settlements.

A number of companies affected by the agreement started sheet or tinplate units this week, after a shutdown since June 30. In the Mahoning Valley, however, the accumulation of orders during the suspension, was small.

Seventeen makers were represented at the Columbus conference.

The Steubenville, Ohio, plant of LaBelle Iron Works, idle much of the time since the first of the year, started up last week. All of the eight sheet mills of this works went on July 5, while 4 of the 11 open hearth furnaces were started up July 7.

Due to lack of business, the Masury plant of the Pennsylvania Tank Car Co. has closed for an indefinite period, affecting several hundred workers.

The Mercer works of the American Sheet & Tin Plate Co. at Farrell, Pa., resumed in full this week.

Iron and Steel Markets

WAGE REDUCTIONS

Little Market Response to New Steel Prices

Better Railroad Buying and More Activity in Pig Iron—Export Competition Sharper

Less rather than more buying has followed the formal posting of new steel price lists last week, and steel works operations have not improved. Buyers do not question that prices are generally below cost, but they need little steel and await the effect of labor and freight adjustments.

Further wage reductions by independent steel companies will go into effect July 16. The rate for common labor is reduced from 37 to 30 cents per hour, making the total reduction from the peak about 35 per cent. The Steel Corporation, by abolishing the eight-hour basic day, comes to 37 cents per hour for common labor. There are predictions of a 25-cent rate before the downward movement is stopped, as against 19 cents before the war. In one Eastern mill town as low as 20 cents is now being paid.

The independent sheet and tinplate mills made a settlement at Columbus, Ohio, on July 9, with the union workers which means a 10 per cent lower labor cost. The Western bar iron scale is yet to be fixed. Two independent sheet makers who signed the scale last year are expected to operate on the open shop plan in future.

The Steel Corporation followed the Bethlehem Steel Co. in announcing 1.90c. as its price for bars, with other prices the same as in the Bethlehem schedule. In addition, the Steel Corporation issued new cards reducing prices on standard pipe $2 to $4 per ton on butt weld and $4 to $6 per ton on lap weld, while oil country goods were reduced by $4 to $7 per ton. A $5 reduction in wire was also made, bringing nails down to $2.75 per keg and plain wire to $2.50 per 100 lb. On wire rods the price has gravitated to $42.

Market prices of some products, including hot and cold rolled strip steel, are not well defined. Irregularity appears also in seamless tubes. While 2.60c. is regarded as the Steel Corporation price on hot rolled strip, sales by other makers are reported at 2.50c. and lower.

The season's business on cotton ties has opened at a price of $1.35, Pittsburgh, per bundle of 45 lb. and a carrying charge of 1c. per bundle per month, as compared with $2 in 1920 and $1.70 in 1919. It is reported that German cotton ties have been offered as low as $1.36 at Gulf port, but no sales have been made in view of the uncertainty of deliveries.

New structural projects total 11,000 tons, nearly half of which is for a building in the Grand Central area in New York. Contracts awarded involve about 7000 tons in sizable jobs, while the capacity of the country's fabricating shops exceeds 40,000 tons per week.

Marked increase in interest on the part of pig iron buyers in several important centers, with sales of fair tonnages, has caused a more cheerful sentiment, but business is being taken at further price concessions. Southern iron has declined 50c. and at Chicago charcoal has been marked down $1.50, while other grades have declined $1 in that market and lower prices are also noted at Pittsburgh, where an offer to buy 1500 tons of basic at $18, or $1.50 below the prevailing quotation, is considered to represent the views of buyers.

Rails are the chief item in the export trade. The Pekin & Mukden Railway inquiry has been increased from 11,000 to 17,000 tons, and the award is expected this month. On 9500 tons for Argentina the Belgian mill which took the order bid 469 francs or close to $36 per ton, c.i.f. Santa Fe, while the lowest bid from the United States was $62.15. A 5000-ton girder rail order for a Toronto car line, taken this week, will be rolled at Bethlehem.

A bridge over the Yellow River, China, requiring 40,000 tons of steel, which has been bid on by several American builders, would probably go to Europe on the score of price, but financial problems threaten long postponement.

While offers of Belgian and German steel in the United States at low prices are still reported, sales do not result, all buying being at so low an ebb. In Canada likewise offers of Continental steel have been ignored, though at $10 per ton below American prices.

Continental pressure has forced another downward revision of 10s. and £1 in British steel prices, with rails now quoted at £10 against £13 a week ago. Urgent need of pig iron has put in some blast furnaces, but others are waiting on stabilization of fuel prices.

Pittsburgh

PITTSBURGH, July 12.

The general report of steel manufacturers here is that the reaction following the new prices has been extremely poor. It usually happens that on price revisions such as that of last week, it takes some little time to complete the readjustments and during such periods very little business is done. The latest revision, however, with the possible exception of wire products, merely gave public affirmation to prices which previously had been current, and since there was no actual reduction, buyers seem to be expecting still further concessions and are holding off. In this attitude they are encouraged by the wage reduction from 37c. to 30c. per hour in the common labor wage rate by Valley steel makers and the expectation that this action will be followed by independents in the Pittsburgh district.

Abrogation by the Steel Corporation of the basic eight-hour day will mean a reduction in producing costs but not nearly enough to offset the high overhead which current operations mean, nor as much as would be saved if the corporation subsidiaries were operating in normal fashion. The position of leading steel manufacturers is that the new prices are as low as they should be on to-day's producing cost, and some go so far as to say that even if common labor was obtainable at 25c. an hour no excuse would exist for further concession until the industry obtained the benefit of lower

A Comparison of Prices

Advances Over the Previous Week in Heavy Type, Declines in Italics

At date, one week, one month, and one year previous

For Early Delivery

Pig Iron, Per Gross Ton:	July 12, 1921	July 5, 1921	June 14, 1921	July 13, 1920
No. 2X, Philadelphia‡	$25.50	$25.50	$25.50	$48.15
No. 2, Valley furnace†	*20.50*	21.00	22.50	45.00
No. 2 Southern, Cin'ti†	*24.50*	25.50	26.50	45.50
No. 2, Birmingham, Ala.†	*20.00*	21.00	22.00	42.00
No. 2 foundry, Chicago*	*19.00*	20.00	21.00	45.00
Basic, del'd, eastern Pa.	23.50	23.50	25.00	43.00
Basic, Valley furnace	*19.50*	20.00	21.00	46.00
Bessemer, Pittsburgh	*22.96*	23.46	24.96	47.40
Malleable, Chicago*	*19.00*	20.00	21.00	43.50
Malleable, Valley	*21.00*	21.50	23.00	45.00
Gray forge, Pittsburgh	*21.46*	21.96	23.46	44.40
L. S. charcoal, Chicago	*35.00*	37.50	37.50	57.50
Ferromanganese, del'd	70.00	70.00	75.00	225.00
Rails, Billets, etc., Per Gross Ton:				
Bess. rails, heavy, at mill	$45.00	$45.00	$45.00	$55.00
O.-h. rails, heavy, at mill	47.00	47.00	47.00	57.00
Bess. billets, Pittsburgh	33.00	33.00	37.00	60.00
O.-h. billets, Pittsburgh	33.00	33.00	37.00	65.00
O.-h. sheet bars, P'gh	35.00	35.00	39.00	70.00
Forging billets, base, P'gh.	38.00	38.00	42.00	85.00
O.-h. billets, Phila.	38.74	38.74	42.74	69.10
Wire rods, Pittsburgh	*43.00*	45.00	48.00	75.00
	Cents	Cents	Cents	Cents
Skelp, gr. steel, P'gh., lb.	2.00	2.00	2.20	2.75
Skelp, sh. steel, P'gh., lb.	2.00	2.00	2.20	3.00
Finished Iron and Steel, Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Iron bars, Philadelphia	*2.15*	2.25	2.25	4.75
Iron bars, Chicago	*2.00*	2.10	2.25	3.75
Steel bars, Pittsburgh	1.90	1.90	2.10	3.50
Steel bars, New York	2.28	2.28	2.48	4.02
Tank plates, Pittsburgh	1.90	1.90	2.00	3.50
Tank plates, New York	2.28	2.28	2.38	3.77
Beams, etc., Pittsburgh	2.00	2.00	2.20	3.10
Beams, etc., New York	2.38	2.38	2.58	3.27
Steel hoops, Pittsburgh	2.50	2.50	2.75	5.50

*The average switching charge for delivery to foundries in the Chicago district is 70c. per ton.
†Silicon, 1.75 to 2.25. ‡Silicon, 2.25 to 2.75.

Sheets, Nails and Wire, Per Lb. to Large Buyers:	July 12, 1921 Cents	July 5, 1921 Cents	June 14, 1921 Cents	July 13, 1920 Cents
Sheets, black, No. 28, P'gh.	3.50	3.50	3.85	6.50
Sheets, galv., No. 28, P'gh	4.50	4.50	5.00	8.00
Sheets, blue an'l'd, 9 & 10.	2.65	2.65	2.90	5.00
Wire nails, Pittsburgh	*2.75*	3.00	3.00	4.00
Plain wire, P'gh	*2.50*	2.75	2.75	3.50
Barbed wire, galv., P'gh	*3.40*	3.65	3.85	4.45
Tin plate, 100-lb. box, P'gh.	$5.75	$5.75	$6.25	$7.00
Old Material, Per Gross Ton:				
Carwheels, Chicago	$13.25	$13.25	$13.25	$35.50
Carwheels, Philadelphia	*16.00*	18.00	18.00	38.00
Heavy steel scrap, P'gh	12.00	12.00	13.00	26.00
Heavy steel scrap, Phila.	11.00	11.00	11.50	22.50
Heavy steel scrap, Ch'go	10.00	10.00	11.00	23.50
No. 1 cast, Pittsburgh	16.00	16.00	17.00	40.00
No. 1 cast, Philadelphia	16.00	16.00	17.50	37.00
No. 1 cast, Ch'go (net ton)	12.50	12.50	13.00	36.00
No. 1 RR. wrot, Phila.	13.50	13.50	15.00	33.00
No. 1 RR. wrot, Ch'go (net)	*9.25*	9.50	9.50	25.00
Coke, Connellsville, Per Net Ton at Oven:				
Furnace coke, prompt	*$2.75*	$3.00	$3.00	$17.00
Furnace coke, future	3.25	3.25	3.25	11.50
Foundry coke, prompt	*4.00*	4.25	4.50	18.00
Foundry coke, future	4.75	4.75	5.00	14.00
Metals, Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Lake copper, New York	12.75	12.75	13.00	19.00
Electrolytic copper, N. Y.	12.62½	12.62½	13.00	19.00
Zinc, St. Louis	*4.30*	4.35	4.45	7.85
Zinc, New York	*4.80*	4.85	4.95	8.20
Lead, St. Louis	*4.35*	4.25	4.25	8.15
Lead, New York	4.40	4.40	4.50	8.40
Tin, New York	*28.50*	29.87½	29.25	50.25
Antimony (Asiatic), N. Y.	4.75	4.75	5.20	7.50

The prices in the above table are for domestic delivery and do not necessarily apply to export business.

Composite Price, July 12, 1921, Finished Steel, 2.493c. per Lb.

Based on steel bars, beams, tank plates, open-hearth rails, plain wire, black pipe and No. 28 gage black sheets

July 5, 1921,	2.557c.
June 14, 1921,	2.679c.
July 13, 1920,	3.867c.
10-year pre-war average,	1.684c.

freight rates. It is asserted that every ton of steel produced by the Pittsburgh district to-day carries freight charges of more than $7.50. It remains to be seen, however, whether the deadlock will be broken by the latest price changes. The industry continues to look forward hopefully to the railroads as a Moses. Thus far, outside of the car repair orders which have been placed, in which Pittsburgh district shops have not shared, there has been no tangible evidence of increased railroad buying, but a good many expect results in the next 30 or 60 days from the economies the railroads will be able to effect through lower wage rates and the abrogation of war-time labor agreements, while the attitude of the Administration toward the carriers also is looked upon as a hopeful sign.

The most promising development of the recent past indicating that a turn is not far distant is to be found in the pig iron market where there has been one inquiry for 1500 tons of basic iron carrying a firm offer of $18 furnace, while there also has been some activity on the part of sellers to get melters to make bids.

Some confusion has attended the reaching of official prices on some of the minor steel products, the market not being very clearly defined in this respect on hoops and bands or hot-rolled strip steel. The Steel Corporation price on these products is 2.60c., base, Pittsburgh, but some of the independents are quoting 2.50c. and it is known that some business was done even as low as 2.40c. It is probable, though, that the official quotation will be 2.60c. The new quotation on cold-finished steel bars has been set at 2.80c., base, Pittsburgh, but this is above what previously had been possible and shading is likely on the appearance of attractive orders. As a matter of fact, the new prices of the latter product and a number of others are regarded as maximum rather than minimum.

We note no increase in steel plant activities in the past week, indeed the tendency still is in the other direction, and the fact that an agreement has been reached between the Amalgamated Association of Iron, Steel and Tin Workers and the sheet and tin plate manufacturers, on the question of a wage scale, has not yet found reflection in the activities of the plants involved. Indications are that at least two and probably more sheet and tin plate makers will not sign up with the Amalgamated Association this year.

The coke market has been enlivened by an inquiry from the Wickwire-Spencer Steel Corporation, Buffalo, for 30,000 tons for August and September delivery, this company figuring on starting up some of its idle furnaces Aug. 1.

Ferroalloys.—There is an utter dearth of inquiries and in the absence of important sales prices are purely conjectural. The proposed import duties on ferromanganese and manganese ore have been without effect upon the demand for the former because consumers uniformly regard them as improbable of enactment and some of the larger independent steel makers are figuring on making their own ferromanganese in the event of the passage of the bill as introduced. These companies figure that they could save almost $20 per ton by making their own ferromanganese, even with a duty of 1c. per lb. on the metallic content of the ore. Generally domestic makers of ferromanganese are holding to $80 delivered for 76 to 80 per cent material, but there has been no recent basis in sales for a price of more than $70. There are reports here that English makers would consider contract business around $60 f.o.b. New York. Makers of spiegeleisen are quoting $30 to $31, furnace, for average 20 per cent alloy, but this is about $3 per ton above what could be done to-day even on small tonnages. We note the sale of a carload of 50 per cent ferrosilicon of domestic origin at $62.50

delivered. This sale, however, was surrounded by some unusual conditions and the real minimum is $65.

We quote 76 to 80 per cent ferromanganese at $70 delivered on domestic; English, 76 to 80 per cent, $70, c.i.f. Atlantic seaboard. We quote average 20 per cent spiegeleisen at $27 to $28 furnace quoted by makers on direct business and $25 to $26 furnace on resale tonnages; 50 per cent ferrosilicon, $65 furnace, freight allowed, for domestic and foreign material. Bessemer ferrosilicon is quoted f.o.b. Jackson County and New Straitsville, Ohio, furnaces, as follows: 9 per cent, $41.50; 10 per cent, $45; 11 per cent, $48.50; 12 per cent, $51.60. Silvery iron, 6 per cent, $32; 7 per cent, $33.50; 8 per cent, $35.50; 9 per cent, $37.50; 10 per cent, $40; 11 per cent, $43.30; 12 per cent, $46.60. The present freight rate from Jackson and New Straitsville, Ohio, into the Pittsburgh district is $4.06 per gross ton.

Pig Iron.—We note another sale of 2000 tons of standard basic iron but at a further recession of 50c. per ton, the iron moving from a Valley steel works at $19.50, furnace. This is as low as any sales of this grade are reported, although there are rumors that small lots have changed hands at $19, Valley furnace, or its equivalent. It is also reported that a price of less than $18.50, figuring on a Valley furnace basis, has been quoted against an inquiry for a round tonnage recently put out by a Pittsburgh district melter. A steel foundry interest which recently bought 100 tons of basic at $20.80 delivered, equal to $20.10 at the furnace from which it was shipped, is reported to have duplicated that purchase. An inquiry for 1500 tons of basic carrying a firm offer of $18, Valley furnace, has been before a number of producers, but has not been placed. Bessemer iron has been offered at $21, Valley furnace, without takers, and a higher price is no longer justified. It is probable that this grade could be bought at $20.50, Valley furnace. Only small sales of foundry iron are being made and on these the common base is $20.50, Valley furnace, for No. 2 grade. A radiator company with plants in Johnstown and New Castle, Pa., and Trenton, N. J., is reported to be in the market for 1200 tons of foundry iron. Since only the latter plant of the company is busy, it is probable that the business will be placed in the East.

We quote Valley furnace, the freight rate for delivery to the Cleveland or Pittsburgh district being $1.96 per gross ton:

Basic	$19.50
Bessemer	21.00
Gray forge	19.50
No. 2 foundry	20.50
No. 3 foundry	20.00
Malleable	21.00

Billets, Sheet Bars and Slabs.—So little is going on that actual prices are quite as indefinite as they were prior to the Bethlehem Steel Co. announcement as of July 5. So much finishing capacity is idle that both demands and specifications are exceedingly light. In the absence of inquiries which would provide a test, quotations must be regarded as entirely nominal.

We quote 4 x 4 in. soft Bessemer and open-hearth billets at $33; 2 x 2-in. billets, $35; Bessemer and open-hearth sheet bars, $35; slabs, $34; forging billets, ordinary carbons, $38, all f.o.b. Youngstown or Pittsburgh mills.

Wire Rods.—The recent reduction of $5 per ton in wire products has been accompanied by a like reduction in prices of wire rods. Information as to price of the American Steel & Wire Co. on rods is lacking, but independent companies have assumed that the reduction in finished products by this company carried with it the same cut in rods. Little is going and not much publicity is being given prices, but there is no question that all independent makers would take business at $43 for the base size of soft rods. Prices are given on page 112.

Plates.—Inquiry still is very light and buyers look upon the new base of 2c., Pittsburgh, as merely a nominal figure, and likely to be shaded on sizable orders. The Pittsburgh-Des Moines Steel Co., which was awarded 14 55,000-bbl. storage tanks by the Shipping Board, has not yet bought the 2800 tons of plates which will be required.

Structural Material.—Structural inquiries have been much fewer since the holiday than they were previously and awards, except of tonnages of less than 100 tons, have been few. The building trade situation seems to be clearing up slowly and the decline in business seems to be ascribable chiefly to the unsettlement of the latest price revision in plain material. The new base of 2c. for structural beams is rather nominal, at least in the minds of fabricating interests, some of which report bids on fabricated steel that would indicate a plain material base of around 1.65c. The Bureau of Yards and Docks, Navy Department, has awarded the McClintic-Marshall Co. 175 tons for a machine shop at San Diego, Cal., and 230 tons for a machine shop and a carpenter shop at Hampton Roads, Va. The McClintic-Marshall Co. also has taken 500 tons for a 350-ft. arch span bridge over the Willamette River, Oregon City, Ore. The Pittsburgh Bureau of Building Inspection, after a considerable controversy, has issued a permit for the reconstruction of the Empire Building, Liberty Avenue and Stanwix Street, Pittsburgh, whereby this building will be raised from a 12-story to a 30-story structure. The permit also allows the construction of a 30-story building on an adjoining site by the owners of the Empire Building. Plain material prices are given on page 112.

Wire Products.—Last week's cut of $5 per ton, which includes everything in this classification and is the second of like size made since the April effort at stabilization, has not been productive of any appreciable increase in business. Since there was no important cutting of $3 for nails and $2.75 for plain wire, the price changes made last week constitute practically the only actual price reduction that has been made in steel. Cement coated nails go to $2.35 per count keg, Pittsburgh, in the latest revision and there has been a 2½ per cent increase in the discount on woven wire fencing. The latter now is quoted at 68 per cent off list for carload lots, to retailers, while an additional 2½ per cent is made by manufacturers who distribute solely to jobbers.

We quote wire nails at $2.75 base per keg, Pittsburgh, and bright basic and Bessemer wire at $2.50 base per 100 lb., Pittsburgh.

Steel Rails.—As indicated in THE IRON AGE of last week, the new "official" quotation on light rails rolled from new steel, is 2c. Very little demand is developing except for small lots from the coal companies and these are being supplied to a large extent from mills rerolling old sections. A price as low as $40 per gross ton is reported to have been made by the latter.

We quote 25 to 45-lb. sections, rolled from new steel, 2.10c. to 2.20c.; rolled from old rails, 1.80c. to 2c.; standard rails, $45 mill for Bessemer and $47 for open-hearth sections.

Nuts, Bolts and Rivets.—No improvement yet is observed in the demand for bolts and nuts by makers in this district who, to a large extent, are dependent on the railroads for the bulk of their orders. The railroads are recalling a good many of their furloughed shop workmen, however, and it is believed that the next 30 to 60 days will bring some increase in the demand.

Spikes.—The new quotation on railroad spikes is $3 base, a cut of $5 per ton. Bolt and barge spikes, however, were lowered only $1 per ton in the latest revision, the new price being $3.20 per 100 lb.

Iron and Steel Bars.—The new base of 1.90c. for soft steel bars has brought out no increase in the demand, presumably because it is above the price which some makers prior to July 5 were willing to accept. It is now said that a quotation as low as 1.80c., Pittsburgh, was made before the holiday by some of the independent makers. Very little demand is noted for reinforcing bars and those rolling them from new steel still are encountering stiff competition from those making from old rails. Refined iron bars nominally are held at 2.50c. base, but it is believed attractive orders would develop lower figures.

We quote steel bars rolled from billets at 1.90c.; reinforcing bars, rolled from billets 1.90c. base; reinforcing bars rolled from old rails 1.75c. to 1.85c.; refined iron bars, 2.50c., in carloads f.o.b. mill, Pittsburgh.

Cold-Finished Steel Bars.—The "official" base growing out of the recent price revision is 2.80c. Pittsburgh, for carloads and 3.05c. for less than carloads. These prices, however, are at least $1 per ton above the going price prior to July 5, and are generally regarded as maximum, which would be shaded substantially on the appearance of anything like an attractive order. Small sales are known to have been done at 2.75c. base and consequently we quote the carload base at 2.75c. to 2.80c. Business shows no material increase.

Hoops and Bands.—There is some uncertainty as to the new base. The Steel Corporation is quoting 2.60c.,

a drop of $3 per ton from its last previous official price, while independents are quoting 2.55c. and 2.50c. Since the latter price had been named prior to the Bethlehem Steel Co. announcement, and it is even said to have been shaded, it probably measures the present possibilities better than the higher figures. Business still is slack.

Iron and Steel Pipe.—Effective July 7, the National Tube Co. issued new cards cutting prices on standard pipe, ¼-in. and over, $2 to $4 per ton on butt weld and $4 to $6 per ton on lap weld pipe. Effective the same day, prices of oil country pipe were reduced from $4 to $7 per ton. Independent makers have followed these reductions. Price cuts also have been made in wrought iron pipe, the cut being $2 per ton in ¼-in. and ⅜-in., the same as that in the same size of steel pipe, while in the sizes from ½-in. and up the reduction in iron pipe is $8 to $12 per ton, or double that in steel pipe of like sizes. Lower materials and labor costs have permitted this narrowing of the gap between steel and iron pipe, which, up to the latest change, was a matter of $48 to $50 per ton on lap weld, and $54 to $58 in butt weld pipe. The new prices for iron pipe are $44 to $46 per ton above those for steel pipe, in lap weld, while butt weld iron pipe is $50 to $54 per ton higher than steel pipe, size for size. Business has not benefited much from the reduction, possibly because the change has not yet been digested by the consuming trade. New discounts are given on page 112.

Sheets.—A fair number of orders is being received for small lots for quick shipment, but these are coming chiefly from the automobile industry and general business still is light. The new prices are fairly well observed, but it is too early to say the market is firm, since there is so little going on. It is reported that galvanized sheets have been offered as low as 4c., but these sheets have been in stock for some little time. Sheet mill operations are at the lowest point of the year, due to the fact that practically all of the so-called union mills are down. Prices are given on page 112.

Tin Plate.—Orders for small lots are fairly numerous with those companies operating their plants on an open shop basis. Evidently container manufacturers still are inclined to take on supplies only as and when needed and manufacturers are not able to make up schedules very far ahead. A good deal of stock has been made up and the danger of a pinch in the supply over the remainder of the year is considered to be slight. All makers are quoting production plate at $5.75 per base box, Pittsburgh, and stock items no longer are available much below that price. Roofing ternes have been reduced $1 per package on all weights, in keeping with the recent price revisions.

Cotton Ties.—The season was opened last week by the Carnegie Steel Co. which announced a price of $1.35 per bundle of 45-lb. and a carrying charge of 1c. per bundle per month. The Carnegie Steel Co. opening price last year was $2, in 1919 $1.70 and $2.10 in 1918 and 1917. The carrying charge last year was 1½c. per bundle per month. The Pittsburgh Steel Co. also is quoting $1.35 per bundle as compared with its opening price last year of $2.45. Rollings against this season's requirements, although sharply curtailed in keeping with estimates of the cotton crop, are understood to be in excess of probable needs. German competition is being encountered, and a price as low as $1.36 per bundle, delivered, is reported to have been made. German makers do not seem to have succeeded in getting any business, however, because of the uncertainty as to deliveries.

Steel Skelp.—The reaction in the demand to the reduction in steel skelp from 2.20c. to 2c. has been extremely poor. Demands upon the mills for finished tubular goods still are light and the nonintegrated makers have not been tempted by the official reduction recently announced.

Boiler Tubes.—The National Tube Co. has issued a card dated July 7 cutting prices of steel lap-weld boiler tubes from $4 to $12 per ton and the new schedule has been adopted by independent makers. The National Tube Co. has not yet made public the new discounts on seamless tubes, and makers of charcoal iron boiler tubes here are waiting on Eastern producers to take the first step in a revision of prices. Business in all kinds of boiler tubes has been extremely slack for some time and there has been no noticeable increase in the demand since the revision. Discounts are given on page 112.

Hot-Rolled and Cold-Rolled Strips.—The American Steel & Wire Co. has announced a price of 4.25c., base, for cold-rolled strips which compares with 5.50c., its last previous official price, and 5c., at which it was accepting orders prior to the holiday. The new price, therefore, constitutes a cut of $25 a ton from the April 13 price and of $15 per ton from its recent actual selling base. Independent makers are expected to adopt the new price. Hot-rolled strips are variously quoted from 2.50c. to 2.60c., the latter being the price of the Steel Corporation. Business is reflected in mill operations, which are about 25 per cent of capacity.

Steel Chain.—Recent price cuts in steel bars and wire rods have not yet been reflected in steel chain, which still is quoted at 6.25c. per 100 lb. for 1-in. proof coil. There are rumors that this price is being shaded.

Coal and Coke.—The market is an extremely limited affair as regards both the demand and supply, but if there is a definite tendency to prices, it is down. Important operators are not inclined to consider less than $3 per net ton, oven, for spot freshly drawn furnace coke, but it happens from time to time that they have surplus supplies which they are not able to dispose of at more than $2.75. Uniform wage scales are lacking in the Connellsville district and some of the smaller operators are able to obtain workmen at such low rates that they are willing to sell furnace coke right from the oven at $2.75 per net ton. The Wickwire-Spencer Steel Corporation, Buffalo, is figuring on starting up a furnace on Aug. 1, and has sent broadcast an inquiry for 30,000 tons of furnace coke running less than 1 per cent in sulphur, for delivery at the rate of 500 tons a day over August and September. Competition for this business is likely to be sharp, and a price of below $3 is thought possible. Choice brands of foundry coke are held as high as $4.50, but the more common range is from $4 to $4.25 and there are reports that some loaded cars of this grade have gone as low as $3.75. The difference between the wage scales in union and non-union coal fields is beginning to be a factor in the demand.

Old Material.—The market remains extremely dull and prices merely are an appraisal arrived at on bids and offers. Quotations show no marked changes except that on the basis of bids and offers cast iron borings are not quotable above $8 per ton delivered or about 50c. per ton below last week's quotation. Sheet bar crops and heavy breakable cast scrap also are quoted 50c. down from last week's prices. There is an inquiry out from a dealer against a sale of a few hundred tons of mixed borings and turnings carrying a price of about $8.50 delivered Dunbar, Pa. Dealers report much difficulty in getting a bid of more than $7 per ton delivered for machine shop turnings.

We quote for delivery to consumers' mills in the Pittsburgh and other districts taking the Pittsburgh freight rate, as follows:

Heavy melting steel, Steubenville, Follansbee, Brackenridge, Monessen, Midland and Pittsburgh	$12.00 to $12.50
No. 1 cast cupola size	16.00 to 16.50
Rerolling rails, Newark and Cambridge, Ohio; Cumberland, Md.; Parkersburg and Huntington, W. Va.; Franklin, Pa., and Pittsburgh	13.50 to 14.00
Compressed sheet steel	9.50 to 10.00
Bundled sheet sides and ends, f.o.b. consumers' mills, Pittsburgh dist.	8.00 to 8.25
Railroad knuckles and couplers	12.50 to 13.00
Railroad coil and leaf springs	12.50 to 13.00
Railroad grate bars	10.00 to 10.50
Low phosphorus melting stock, bloom and billet ends, heavy plates, ¼-in. and thicker	16.00 to 16.50
Railroad malleable	12.00 to 13.00
Iron car axles	18.00 to 19.00
Locomotive axles, steel	17.50 to 18.00
Steel car axles	14.50 to 15.00
Cast iron wheels	13.00 to 13.50
Rolled steel wheels	12.50 to 13.00
Machine shop turnings	7.00 to 7.50
Sheet bar crop ends at origin	12.00 to 12.50
Heavy steel axle turnings	8.50 to 9.00
Short shoveling turnings	8.00 to 8.50
Heavy breakable cast	13.50 to 14.00
Stove plate	12.00 to 12.50
Cast iron borings	7.50 to 8.00
No. 1 railroad wrought	12.00 to 12.50

Chicago

CHICAGO, July 12.

The new prices on steel products announced by the Bethlehem Steel Co. last week have been generally adopted, but it is too early to ascertain whether they will hold, as most current business is covered by protections granted under former quotations. The railroads continue to show interest in car repairs, although they are not yet letting work on the scale expected in some quarters. The automobile industry is more active than was anticipated a month ago. The Ford Motor Co. continues to maintain a normal output and some other makers are doing well. The Dodge company is turning out 400 to 500 cars a day, the Buick company is manufacturing cars at the rate of 9000 a month, and the Studebaker plants at Detroit and South Bend are reported to be on a 75 per cent basis. Generally speaking, however, the demand for steel continues light.

Pig iron has taken another slump of $1 a ton, and bolts and nuts are weak.

Mill and furnace operation in this district is substantially unchanged except for further curtailment by the Inland Steel Co. This producer has blown out a furnace which has been operating on merchant iron, leaving only one of the company's three furnaces in blast. Its steel output has dropped to between 20 and 25 per cent of normal.

Pig Iron.—Output in this district was further curtailed when on Monday the Inland Steel Co. blew out one of its blast furnaces which had been producing merchant iron. This action leaves only one furnace, a Mayville stack, operating on merchant iron exclusively, while a second furnace, an Iroquois stack, is employed chiefly on Bessemer for an allied company, only occasionally making a few casts of malleable or foundry. Buying is still limited, purchases of carload lots being notably fewer. A local purchaser has bought 100 tons of malleable for Indianapolis delivery at $19, local furnace, while a Chicago plant has closed for 300 tons of foundry averaging 3 per cent silicon at $20, furnace, or figuring silicon differentials at 50c., $19 base, furnace. A carload of charcoal for Eastern delivery has been sold at $32.50 base, furnace, or $1.50 under the previously prevailing market. New inquiries include one for 350 tons of foundry for the United States Radiator Co. at Edwardsville, Ill., and another from a Wisconsin smelter for 150 tons of 3 per cent foundry and 75 tons of charcoal. Coke buying is light, but we note a sale of seven carloads of high-grade beehive foundry to an Indiana buyer at the price ruling at time of delivery.

Quotations on Northern foundry, high phosphorous, malleable and basic irons are f.o.b. local furnace and do not include a switching charge averaging 70c. per ton. Other prices are for iron delivered at consumer's yards, or when so indicated, f.o.b. furnace other than local.

Lake Superior charcoal, averaging sil. 1.50, delivered at Chicago	$36.00 to $36.50
Northern coke, No. 1, sil. 2.25 to 2.75	19.00 to 20.00
Northern coke foundry, No. 2, sil. 1.75 to 2.25	19.00 to 19.50
Northern high phos.	19.00 to 19.50
Southern foundry, sil. 1.75 to 2.25	27.67
Malleable, not over 2.25 sil.	19.00 to 19.50
Basic	19.00 to 19.50
Low phos., Valley furnace, sil. 1 to 2 per cent, copper free	35.00
Silvery, sil. 8 per cent	37.53

Ferroalloys.—A local buyer has purchased 100 tons of resale spiegeleisen at $34 delivered.

We quote 78 to 82 per cent ferromanganese, $78 delivered; 50 per cent ferrosilicon, $80 delivered; spiegeleisen, 18 to 22 per cent, $36 delivered.

Structural Material.—Most mills are quoting the new price of 2c., Pittsburgh, on plain material, announced by the Bethlehem Steel Co. July 4. No new business, however, has developed to test the stability of the quotation. A number of fabricating jobs on which protections had been previously secured have been awarded within the past week, two of them involving over 1000 tons each. The successful bid on one of these was the low figure of approximately $72 delivered. Among pending projects the largest is for repairs to the Armour Grain Co. elevator, Chicago, requiring 1500 tons. Bids were taken last week on the fabrication of the substructure of the Federal Reserve Bank Building, Minneapolis, amounting to 800 tons. Recent lettings include:

U. S. Window Glass Co., plant at Shreveport, La., 2500 tons, Decatur Bridge Co.

Mechanical repair shop, Motor Transport Division, Army, Fort Leavenworth, Kan., 1100 tons, to Missouri Valley Bridge & Iron Co.

Atlas Life Building, Tulsa, Okla., 400 tons, to Kansas City Structural Steel Co.

Selwyn & Harris Theater, Chicago, 348 tons, to Vatnerkloot Iron Works.

Miller Theater and Office Building, Wichita, Kan., 285 tons, to Fort Pitt Bridge Works.

Main building for West Hills School, Salt Lake City, Utah, 217 tons, to Minneapolis Steel & Machinery Co.

Masonic Temple, Kokomo, Ind., 220 tons, reinforced concrete substituted for structural steel.

Rosary College, River Forest, Ill., steel for the roofs of three buildings and a swimming pool, 160 tons, to Lackawanna Bridge Co.

Five highway spans, Taylorville, Ill., 157 tons, to Decatur Bridge Co.

Beams for Twelfth Street bridge, Boulder, Colo., 123 tons, to American Bridge Co.

Government river terminal, St. Louis, 150 tons, to St. Louis Structural Steel Co.

Pending business includes:

Lake Shore Trust & Savings Bank, Chicago, 325 tons, bids in, award expected this week.

The mill quotation is 2c., Pittsburgh, which takes a freight rate of 38c. per 100 lb. for Chicago delivery. Jobbers quote 3.03c. for materials out of warehouse.

Plates.—The leading mills, the subsidiaries of the Steel Corporation included, have adopted the quotations announced by the Bethlehem Steel Co. last week. As the new price of 2c., Pittsburgh, on tank plates is higher than has been done in this section recently, it is a question whether it will bring out business or will merely cause buyers to withhold their orders in the hope that lower quotations will be named. The Standard Oil Co., which was in the market for 25 oil storage tanks for Baton Rouge, La., calling for 3500 tons of plates, has withdrawn its inquiry and will erect old tanks taken from another of the company's properties.

The mill quotation is 2c. Pittsburgh, the freight to Chicago being 38c. per 100 lb. Jobbers quote 3.03c. for plates out of stock.

Bolts and Nuts.—Prices lack stability, some makers quoting larger discounts than those recently published in this column and others billing material f.o.b. Chicago instead of Pittsburgh. The Rock Island Railroad is in the market for 200,000 bolts and has bought 31 tons of rivets. The Great Northern is inquiring for 136,000 bolts. Jobbers continue to buy sparingly.

Jobbers quote structural rivets, 4.03c.; boiler rivets, 4.13c.; machine bolts up to ⅞ x 4 in., 60 per cent off; larger sizes, 55 off; carriage bolts up to ⅞ x 6 in., 55 off; larger sizes, 50 and 5 off; hot pressed nuts, square and hexagon tapped, $3 off; blank nuts, $3.25 off; coach or lag screws, gimlet points, square heads, 60 per cent off. Quantity extras are unchanged.

Bars.—Although most mills are quoting 1.90c., Pittsburgh, on mild steel bars, lower prices are still being named by some makers. Business remains relatively light, although a number of good-sized reinforcing jobs are being figured on, principally at locations outside of this city. A high school at Janesville, Wis., will require 350 tons. Buying of bar iron is still confined to small lots, purchases by railroads thus far having been exceedingly conservative. Prices on this product have again declined, the present ruling market being 2c. to 2.10c., Chicago. The hard steel bar situation remains unchanged both as to price and demand.

Mill prices are: Mild steel bars, 1.85c. to 1.90c., Pittsburgh, taking a freight of 38c. per 100 lb.; common bar iron, 2c. to 2.10c., Chicago; rail carbon, 1.90c. to 2c., mill or Chicago.

Jobbers quote 2.93c. for steel bars out of warehouse. The warehouse quotation on cold-rolled steel bars is 4.35c. for rounds and 50c. extra for flats, squares and hexagons. Jobbers quote hard and medium deformed steel bars at 2.38c. base.

Sheets.—There seems to be little likelihood that the new prices announced by the Bethlehem Steel Co. and the leading interests will be generally adhered to. In fact, lower prices have already been named by some makers. There has been no change in the volume of demand.

Mill quotations are 3.50c. for No. 28 black; 2.65c. for No. 10 blue annealed and 4.50c. for No. 28 galvanized these all being Pittsburgh prices, subject to a freight to Chicago of 38c. per 100 lb.

Jobbers quote: Chicago delivery out of stocks, No. 10 blue annealed, 3.68c.; No. 28 black, 4.90c.; No. 28 galvanized, 5.90c.

Railroad Rolling Stock.—The Chicago Great Western is in the market for repairs on 175 to 200 box cars. The Northern Pacific is asking for alternate figures on 1000 steel center constructions and 1000 underframes. The American Refrigerator Transit Co. has ordered 100 steel underframes from the General American Car Co. The Illinois Central, which recently placed an order for the repair of 600 gondola cars, has let repairs on 400 more to the Haskell & Barker Car Co. The same road was generally reported to be in the market for 100 to 130 engines, but instead is asking for figures on the conversion of 100 to 130 consolidation-type locomotives into Mikado-type engines. The Mississippi Central has bought three locomotives and the Pittsburgh & West Virginia has bought two from the American Locomotive Co. The Western Steel Car & Foundry Co., which was awarded repairs on 300 hopper cars by the Wabash, as noted last week, has placed the steel, amounting to about 1500 tons, with a local mill under a protection granted before the new prices became effective.

Warehouse Prices.—Following the recent announcement of reductions in prices by the mills, local jobbers have cut their quotations on plates, shapes and bars, 20c. per 100 lb. Structural rivets and boiler rivets also have been reduced 50c. a 100 lb., while cold-rolled bars have been marked down 28c. A reduction in warehouse prices on sheets was announced last week and reductions in bolts and nuts have been published in recent issues. Local jobbers have also reduced their quotations on wire products, wire and wire nails having been marked down 25c. per 100 lb. and cement coated nails 15c. per keg. Lap-weld boiler tubes have been reduced from 3c. to 3¼c. per foot, depending on the size. Four-inch is now quoted at 40c. per foot.

Rails and Track Supplies.—Prices on track spikes and bolts have been reduced to 3c. and 4c., Pittsburgh, respectively, while light rails rolled from billets have been marked down to 1.90c., mill. No action has yet been taken on the prices of tie plates and angle bars, but reductions are expected to be made. The Mobile & Ohio has bought 550 kegs of spikes from a local mill.

Standard Bessemer rails, $45; open-hearth rails, $47; light rails rolled from new steel, 1.90c. f.o.b. makers' mills. Standard railroad spikes, 3c., Pittsburgh; track bolts with square nuts, 4c., Pittsburgh; steel tie plates, 2.50c., and steel angle bars, 2.75c., Pittsburgh and Chicago; tie plates, iron, 2.50c., f.o.b. makers' mills.

Cast Iron Pipe.—The Detroit Board of Water Commissioners has awarded 8000 tons, or about one-half the tonnage it took figures on, to the Lynchburg Foundry Co. Akron, Ohio, will take bids for a third time July 18 on 6500 tons of 48-in. On July 15 it will receive figures on 1000 tons of 4 to 16-in. Fort Wayne, Ind., which recently rejected bids on 470 tons, will take figures a second time on July 15. Minneapolis has let 140 tons to the National Cast Iron Pipe Co. and 60 tons to the United States Cast Iron Pipe & Foundry Co. Although there have been fewer municipal lettings of late, private business has been of fair proportions. The ruling price on 6-in. and larger appears to be $40, Birmingham, although some business is reported as having been taken at a few dollars higher.

We quote per net ton, f.o.b. Chicago, ex-war tax as follows: Water pipe, 4-in., $52.10 to $55.10; 6-in. and above, $49.10 to $52.10; class A and gas pipe, $3 extra.

Wire Products.—The leading maker has announced substantial reductions which have been adopted by its competitors. The new prices are as follows:

Wire nails, $2.75 base per keg; plain wire, $2.50 per 100 lb.; galvanized wire, $3 per 100 lb.; barbed wire, $2.90 per 100 lb.; galvanized barbed wire, $3.40; staples, $2.90; galvanized staples, $3.40.

There has not yet been any noticeable change in the demand. Although the railroads are looked to as a source of business, their purchases thus far have been small. Jobbers continue to order from hand to mouth but with the approach of fall they are expected to lay in stocks.

We quote warehouse prices, f.o.b. Chicago: No. 9 and heavier black annealed wire, $3.38 per 100 lb.; No. 9 and heavier bright basic wire, $3.53 per 100 lb.; common wire nails, $3.48 per 100 lb.; cement coated nails, $2.90 per keg.

Old Material.—Consumers are almost totally absent from the market and prices have undergone few changes. Present quotations are regarded as exceedingly low and it is felt that even a slight revival in demand would cause an advance. Railroad lists are heavy. The Baltimore & Ohio and the Southern are advertising 15,000 tons each, the Northern Pacific 2500 tons, the Pere Marquette and the Great Northern 1500 tons each, the Soo Line 900 tons and the Pullman Co 500 tons.

We quote delivery in consumers' yards, Chicago and vicinity, all freight and transfer charges paid, as follows:

Per Gross Ton	
Iron rails	$15.50 to $16.00
Relaying rails	27.50 to 30.00
Car wheels	13.00 to 13.50
Steel rails, rerolling	12.50 to 13.00
Steel rails, less than 3 ft	11.50 to 12.00
Heavy melting steel	10.00 to 10.50
Frogs, switches and guards, cut apart	10.00 to 10.50
Shoveling steel	9.50 to 10.00
Low phos. heavy melting steel	13.00 to 13.50
Drop forge flashings	6.00 to 6.50
Hydraulic compressed sheet	6.50 to 7.00
Axle turnings	7.00 to 7.50
Per Net Ton	
Iron angles and splice bars	13.50 to 14.00
Steel angle bars	9.50 to 10.00
Iron arch bars and transoms	13.50 to 14.00
Iron car axles	17.50 to 18.00
Steel car axles	12.00 to 12.50
No. 1 busheling	8.25 to 8.75
No. 2 busheling	5.75 to 6.25
Cut forge	9.00 to 9.50
Pipes and flues	5.50 to 6.00
No. 1 railroad wrought	9.25 to 9.75
No. 2 railroad wrought	8.75 to 9.25
Steel knuckles and couplers	10.50 to 11.00
Coil springs	11.75 to 12.25
No. 1 machinery cast	12.50 to 13.00
Low phos. punchings	10.50 to 11.00
Locomotive tires, smooth	9.75 to 10.25
Machine shop turnings	3.50 to 4.00
Cast borings	5.00 to 5.50
Stove plate	11.50 to 12.00
Grate bars	10.00 to 10.50
Brake shoes	10.00 to 10.50
Railroad malleable	11.25 to 11.75
Agricultural malleable	11.25 to 11.75
Country mixed	7.00 to 7.50

Philadelphia

PHILADELPHIA, July 12.

Notwithstanding the announcements only last week of new prices on steel products further weakness has appeared. In reality there are today no "regular" prices for steel. Some of the mills are determined to get what business they can and price seems not to be a factor, the only consideration being to get the order, if possible, at the best price obtainable. In structural shapes, for example, concessions of $2 a ton have been freely made, while it is reported that some fabricators have been quoted as low as 1.80c., Pittsburgh. There has been at no time recently any difficulty in obtaining plates at 1.90c., but on attractive tonnage a better figure would be quoted. Bar iron has been sold at 1.80c., Pittsburgh, a reduction of $2 a ton, while one or two orders have been placed at 1.70c. Large bolts and nuts have been reduced about 12½ per cent.

New prices have been named on steel pipe, boiler tubes and wire products. Discounts now effective on pipe and tubes are given under the heading Pittsburgh f.o.b. prices in this issue. The reduction on wire products amounts to $5 a ton and is made by all of the mills, following the lead of the American Steel & Wire Co. Warehouse prices have also been reduced to conform to lower mill prices.

Little new business is in sight, two railroad car inquiries and a few sizable structural jobs being about the only signs of real life in the market. Mill operations continue at a very low rate. The only renewed activity is that the Midvale Steel & Ordnance Co. has started up one plate mill at Coatesville, this plant having been idle since early December, except for one week's rolling in the spring.

Pig Iron.—The local pig iron market continues dull and featureless. A spotty improvement in inquiry is noted, one local office having received several inquiries totaling 2800 tons of foundry iron in one day's mail last week. All of the inquiries, however, were from New England and New York districts, the immediate Philadelphia district offering scarcely any business larger than carload lots. Prices quoted for this dis-

trict on foundry iron range from $23 to $24, furnace, for No. 2 plain, $24 to $25, furnace, on No. 2X and $25 to $26, furnace, on No. 1X, the furnace quoting the lower prices having a freight rate of $1.54 to Philadelphia. In meeting Buffalo competition in New England and in the vicinity of New York, the eastern Pennsylvania furnaces have been obliged, however, to quote lower furnace prices than those above named. In grades of iron other than foundry, there is pronounced dullness, with prices easy but unchanged. Some sales agents of Eastern furnaces point to the fact that shipments of iron are now exceeding the quantity that is being made in this district.

The following quotations are, with the exception of those on low phosphorus iron, for delivery at Philadelphia, and include freight rates varying from 84 cents to $1.54 per gross ton:

East. Pa. No. 2 plain, 1.75 to 2.25 sil.	$24.50 to $25.25
East. Pa. No. 2X, 2.25 to 2.75 sil.	25.50 to 26.25
Virginia No. 2 plain, 1.75 to 2.25 sil.	31.74
Virginia No. 2X, 2.25 to 2.75 sil.	32.99
Basic deliv. eastern Pa.	23.50 to 24.00
Gray forge	23.00 to 23.50
Malleable	26.00 to 27.00
Standard low phos. (f.o.b. furnace)	38.00
Copper bearing low phos. (f.o.b. furnace)	35.00

Ferroalloys.—The possibility of the imposition of a high tariff on imported ferromanganese and manganese ore has not stimulated any buying interest among consumers, the market continuing as dull as it has been for some time. Ferromanganese is available at $70 to $80, delivered, and spiegeleisen at $28 to $30, furnace. Some low-grade ferromanganese is offered at $1 per unit.

Semi-Finished Steel.—No inquiry of importance has come out for semi-finished steel since the announcement of new prices $4 a ton lower. Open-hearth rerolling billets are to be had at $33 and forging billets at $38, Pittsburgh.

Plates.—The Midvale Steel & Ordnance Co. has started one plate mill at Coatesville to roll an order for 1200 tons of locomotive plates. Otherwise there is no change in plate mill operations in the East, most of the mills being idle or operating only intermittently on small orders. Several shipyards, which are bidding on one or two boats for the Red D Line, have inquired for 2600 or 5200 tons of plates and shapes. Plate mills are somewhat encouraged by the belief that considerable car repair work will come out within the next few months. The Bangor & Aroostook Railroad is inquiring for 200 flat cars and 300 composite gondolas and the Western Maryland asks bids on 500 steel car bodies. We quote sheared plates at 1.90c. to 2c., Pittsburgh.

Structural Shapes.—Eastern fabricating shops are quoting on a fair quantity of work, but difficulty is experienced in getting builders to go ahead. Several projects on which the general contracts have been let are still held up so far as the steel is concerned. Some of the mills are making every effort to assist the fabricators with whom they work to close business by naming low prices. In one instance 1.80c., Pittsburgh, is reported to have been named by an Eastern mill, while 1.90c. is freely quoted. We quote plain material at 1.90c. to 2c., Pittsburgh.

Bars.—Some makers of bar iron have made price concessions of $2 a ton from the recent quotation of 1.90c., Pittsburgh, but this has been done only on desirable specifications. In at least one instance, 1.70c., Pittsburgh, has been named. There is no improvement in the demand for steel bars. While 1.90c., Pittsburgh, is the nominal quotation, a good specification would undoubtedly command a lower figure. A few large inquiries for concrete bars, which have been in the market for some weeks, are still pending. We quote bar iron at 1.80c. and soft steel bars at 1.90c., Pittsburgh.

Wire Products.—Independent mills have met the prices adopted by the American Steel & Wire Co. Wire nails are now quoted at $2.75 per keg, plain wire at $2.50 per 100 lb., cement coated nails, $2.35, and galvanized barbed wire at $3.40.

Bolts and Nuts.—Lag screws, nuts and large-size bolts have been reduced in price about 12½ per cent. Large machine bolts are now 65 and 10 per cent off list, lag screws, 70 and 5 per cent off and hot pressed nuts, square and hexagon, c.p.c. and t., blank, 5c. off list, tapped, 4.50c. off list.

Warehouse Business.—Reductions of several dollars a ton have been made by local warehouses in line with the lower mill prices on steel products. We quote the new warehouse prices for local delivery as follows:

Soft steel bars and small shapes, 2.90c.; iron bars (except bands), 2.90c.; round edge iron, 3.20c.; round edge steel, iron finish, 1½ in. x ½ in., 3.20c.; round edge steel, planished, 3.95c.; tank steel plates, ¼-in. and heavier, 3c.; tank steel plates, 3/16-in., 3.20c.; blue annealed steel sheets, No. 10 gage, 3.65c.; light black steel sheets, No. 28 gage, 4.50c.; galvanized sheets, No. 28 gage, 5.50c.; square twisted and deformed steel bars, 2.90c.; structural shapes, 3c.; diamond pattern plates, ¼-in., 4.75c.; 3/16-in., 4.95c.; ¼-in., 5.05c.; spring steel, 4.40c.; round cold-rolled steel, 4.50c.; squares and hexagons, cold-rolled steel, 5c.; steel hoops, No. 13 gage and lighter, 3.85c.; steel bands, No. 12 gage to 3/16-in. inclusive, 3.60c.; iron bands, 4.20c.; rails, 3.20c.; tool steel, 12c.; Norway iron, 6.50c.; toe steel, 4.50c.

Old Material.—The scrap market is stagnant and prices are almost stationary. We quote carwheels $2 a ton lower. The following are prices for delivery at consuming points in this district:

No. 1 heavy melting steel	$11.00
Scrap rail	$10.00 to 10.50
Steel rails, rerolling	14.00 to 15.00
No. 1 low phos., heavy 0.04 and under	17.00 to 18.00
Car wheels	16.00 to 17.00
No. 1 railroad wrought	13.50 to 14.50
No. 1 yard wrought	12.50 to 13.00
No. 1 forge fire	10.00 to 10.50
Bundled sheets (for steel works)	8.00 to 8.50
No. 1 busheling	11.50 to 12.00
No. 2 busheling	10.00 to 11.00
Turnings (short shoveling grade for blast furnace use)	7.50 to 8.00
Mixed borings and turnings (for blast furnace use)	7.00 to 7.50
Machine-shop turnings (for rolling mill and steel works use)	7.50 to 8.00
Heavy axle turnings (or equivalent)	8.50 to 9.00
Cast borings (for rolling mills)	8.50 to 9.00
Cast borings (for chemical plants)	No market
No. 1 cast	16.00 to 17.00
Railroad grate bars	12.50 to 13.00
Stove plate (for steel plant use)	12.00 to 12.50
Railroad malleable	15.50 to 16.50
Wrought iron and soft steel pipes and tubes (new specifications)	11.50 to 12.00
Iron car axles	No market
Steel car axles	No market

Boston

BOSTON, July 12.

Pig Iron.—Estimated sales for the week are not more than 1500 tons, mostly eastern Pennsylvania, and at private terms. The largest sale was one of 600 tons No. 2X Northern to the Saco-Lowell Shops, Boston, at an indicated price of $21 furnace, which would bring the furnace base price down to at least $20.50. A Framingham, Mass., melter took 200 tons No. 1X eastern Pennsylvania at a price of around $20 furnace for No. 2 plain. In both instances it is believed iron was purchased on a delivered basis of about $25. The other extreme is a sale of 200 tons eastern Pennsylvania No. 2X to a Massachusetts consumer at $29.81 delivered, which figures out $24.75 furnace for No. 2 plain. Another Massachusetts foundry bought 200 tons eastern Pennsylvania resale at private terms and some half dozen car lots, largely eastern Pennsylvania, silicons 2.25 to 2.75 and 2.75 to 3.25, were purchased by various Massachusetts melters at $25 to $30 delivered. New Hampshire and Massachusetts melters took car lots of Buffalo No. 1X at $28.50 delivered. Delivered pig iron prices follow:

East. Penn., silicon 2.25 to 2.75	$25.56 to $29.31
East. Penn., silicon 1.75 to 2.25	25.06 to 28.81
Buffalo, silicon 2.25 to 2.75	25.96 to 29.46
Buffalo, silicon 1.75 to 2.25	25.46 to 28.46
Virginia, silicon 2.25 to 2.75	33.08 to 34.58
Virginia, silicon 1.75 to 2.25	32.08 to 33.58
Alabama, silicon 2.25 to 2.75	33.16 to 33.66
Alabama, silicon 1.75 to 2.25	32.66 to 33.16

Warehouse Business.—Local prices on Wayne iron have been reduced 50c. per 100 lb.; on cold rolled steel, 30c.; best refined and Norway iron, 25c.; soft steel bars, steel flats, concrete bars, structural, plates, steel bands and refined iron, 20c.; on tire steel and steel hoops, 5c. Quotations on open-hearth and crucible spring steels, steel half rounds, ovals and bevels and toe calk steel remain unchanged. The demand for iron and steel, if anything, is quieter, and that for bolts and

nuts is decidedly so, buyers holding off for lower prices. The flurry of buying of horseshoes has dried up.

Jobbers now quote: Soft steel bars, $2.98 per 100 lb. base; flats, $3.98 to $4.08; concrete bars, $2.50 to $3.25¼; tire steel, $4.20 to $4.70; spring steel, open hearth, $5.25; crucible, $11.50; steel bands, $3.63 to $4.08; steel hoops, $4.33; toe calk steel, $5.25; cold rolled steel, $4.35 to $4.85; structural, $2.98 to $3.13; plates, $3.08 to $3.28; No. 10 blue annealed sheets, $3.83; No. 28 black sheets, $5.50; No. 28 galvanized sheets, $6.50; refined iron, $2.98 to $5; best refined, $4.75; Wayne iron, $7; Norway iron, round, ¼-in. to 2½-in., 7.10c. per lb. net; other sizes, 7.75c. base.

Finished Material.—The Boston Structural Steel Co., Inc., Cambridge, Mass., was awarded 330 tons structural for a Boston municipal building. Original plans for the Lynn-Point of Pines, Mass., bridge, involving 650 tons, are abandoned, a wooden structure being substituted. Bids are being taken on 300 tons structural steel for an Allston, Boston, theater, and 300 tons for a Mystic, Conn., highway bridge. Bids are in on 600 tons for a Pawtucket, R. I., theater. Stone & Webster, within a month, will ask bids on about 300 tons for the Ford Motor Co.'s Green Island, N. Y., proposed plant. The Government has asked for re-bids on 200 tons boiler plates recently awarded by a shipyard. Mill representatives are getting more small orders than usual, but few large orders for plates. Contrary to earlier reports, 500 tons of girder rails wanted by the Eastern Massachusetts Street Railway Co. have not been placed. New prices on steel, publicly announced recently, are shaded more often than adhered to, 1.90c. Pittsburgh having been named on plates, shapes and bars. Inquiries on one 100-ton lot of reinforcing bars brought out 1.90c., Pittsburgh base from mills, and 2c., Pittsburgh, from local jobbers. The Amoskeag Mfg. Co., Boston, is in the market for 200 tons of deformed bars.

Coke.—New England foundry coke producers have eliminated the spread in spot and contract prices, now quoting both at $10.91 delivered, where the local freight rate does not exceed $3.40. This change is the first one reported since early in June and represents a drop of 50c. per ton on spot and 25c. on contract, and is equivalent to $4.57 f.o.b. Connellsville ovens. Both the New England Coal & Coke Co. and the Providence Gas Co. continue to give consumers the right to contract for last half fuel at prices ruling at date of shipment. Contracted coke as of July 1 approximated 50 per cent of that for the corresponding period last year, which is considerably better than the showing in normal years. The New England Coal & Coke Co. has reduced wages of plant employees about 10 per cent.

Old Material.—The market is practically at a standstill and quotations are largely nominal. The only sale of importance reported this week is one of 500 tons of heavy melting steel at $12 delivered to a Massachusetts melter. Steel mills, last month interested in heavy melting steel, etc., are operating on such a small scale they have ceased to be old material market factors. Purchases of machinery cast by New England foundries are confined to an occasional car lot on a basis of $17 to $17.50 delivered for No. 1. Stove plate generally is quoted at around $15 delivered, but no sales are reported this week. Stocks of old material in New England yards are much larger than they were Jan. 1, inasmuch as three-fourths of stock taken in since then could not be sold except at a loss. Many yard owners have reached a point where they are unwilling to commit themselves further.

The following prices are for gross ton lots delivered consuming points:

No. 1 machinery cast	$17.00 to $17.50
No. 2 machinery cast	15.50 to 16.00
Stove plate	15.00 to 16.00
Railroad malleable	14.00 to 15.00

The following prices are offered per gross ton lots f.o.b. Boston rate shipping points:

No. 1 heavy melting steel	$5.50 to $6.00
No. 1 railroad wrought	10.50 to 11.00
No. 1 yard wrought	8.50 to 9.00
Wrought pipe (1-in. in diameter, over 2 ft. long)	6.50 to 7.00
Machine shop turnings	2.50 to 3.00
Cast iron borings, rolling mill	3.00 to 3.50
Cast iron borings, chemical	3.50 to 4.00
Blast furnace borings and turnings	2.50 to 3.00
Forged scrap and bundled skeleton	5.00 to 5.50
Street car axles and shafting	12.00 to 12.50
Car wheels	11.50 to 12.00
Rerolling rails	9.00 to 10.00

Buffalo

BUFFALO, July 12.

Pig Iron.—There is a decided picking up in inquiry with majority of producers, but it has not been reflected in orders. This increase brings no better or more optimistic feeling to the producers, as they are not hopeful of seeing much of it reduced to actual sales. With one furnace the total tonnage on which prices were asked last week was 7000 tons as compared with 3000 the preceding week, while their sales for the week were slightly less than 1000 tons. This company is quoting $21 on 2.25 to 2.75 silicon, but has sold a grade of iron containing extra high sulphur at less than $20. In the 7000 tons on which prices were asked were 25 individual inquiries. Sales of 500 tons at $22 and $23 base represent the week's business with a producer who is operating one furnace out of a group of three—but only from week to week. Operating in August depends on a pick up in orders the remainder of this month. An inquiry for 500 tons was abandoned by the prospective buyer before prices were quoted. The furnace interest was not inclined to regret the decision not to buy, as the delivery was for the last half of the year—a factor no more attractive than heretofore. A decided falling off in orders for the iron made by a steel company is noticed; sales of less than 500 tons have been recorded. The campaign conducted by brokers to sell this product has resulted in inquiry of 6000 tons reaching the maker. The price situation is the same—$21.50 the usual base, but $21 would be accepted on an order of 1000 tons or more. There is no verification to the report that the national user who has been the largest sole buyer, bought 3000 tons of Buffalo iron at $19.50 base.

We quote f.o.b. dealers' asking prices per gross ton Buffalo as follows:

No. 1 foundry, 2.75 to 3.25 sil	$22.75 to $23.50
No. 2X foundry, 2.25 to 2.75 sil	21.75 to 22.50
No. 2 plain, 1.75 to 2.25 sil	21.00 to 21.50
Basic (nominal)	21.00 to 22.00
Malleable (nominal)	23.00 to 24.00
Lake Superior charcoal	37.00

Warehouse Business.—Coincident with new price schedule announcements by mills, local warehouses have adjusted their prices all along the line. Business has not improved since the announcement but executives attribute the general lull to the wait which preceded new schedules and say that sufficient time has not elapsed for anything to develop. Plate business seems to overshadow activity in other lines. In point of size, best orders come from customers who admit failure to get the same material at mills for immediate delivery.

We quote warehouse prices f.o.b. Buffalo as follows: Structural shapes, 3.05c.; plates, 3.05c.; plates, No. 8 gage, 3.65c.; soft steel bars and shapes, 2.95c.; hoops, 3.65c.; blue annealed sheets, No. 10 gage, 3.70c.; galvanized steel sheets, No. 28 gage, 5.80c.; black sheets, No. 28 gage, 4.80c.; cold rolled strip steel, 7.15c.

Finished Iron and Steel.—Reopening of several railroad shops is a matter for vicinity encouragement. Altogether the mills are more hopeful and with the price situation cleared, for the present at least, better business seems nearer. One of the largest factors here—a branch of a Pittsburgh interest—has been advised to conform to the price scale announced by the mill first in the field last week to make public its cuts. Canadian business is quiet and is likely due to the customs ruling explained last week in THE IRON AGE. No price schedule will be published by the largest of independent mills here. The same policy which has been in existence for some time—of meeting competition as it develops—will continue. Several fair structural jobs have been awarded. The Van Dorn Iron Co., Cleveland, has booked the order for the cell work at the new penitentiary. The Buffalo Structural Steel Co. will fabricate 60 tons for the same job. The Lackawanna Bridge Co. will fabricate 375 tons for the new warehouse of the barge canal at Rochester. Better inquiry with one mill office is not attributed to new prices; its business in structural shapes and in plates is entirely a carload proposition. There is a goodly proportion of small orders in bars and sheets and pipe business consisting of one and two carload lots is regarded as satisfactory in view of general conditions.

Better business in piling has come to a mill—orders for 1000 tons having been booked in one week.

Old Material.—Increased shop operation with the railroads may throw considerable material on the market. Dealers cannot report any worth-while business and stocks in the yards have not been reduced to any appreciable extent. Prices, of course, are nominal, but dealers are quoting less now than a week ago.

We quote dealers' asking prices per gross ton f.o.b. Buffalo as follows:

Heavy melting steel	$11.50 to $12.00
Low phos., 0.004 and under	15.00 to 16.00
No. 1 railroad wrought	12.00 to 13.00
Car wheels	13.00 to 14.00
Machine shop turnings	5.00 to 6.00
Cast iron borings	5.00 to 6.00
Heavy axle turnings	8.00 to 9.00
Grate bars	9.00 to 10.00
No. 1 busheling	9.00 to 10.00
Stove plate	12.00 to 13.00
Bundled sheet stampings	6.00 to 7.00
No. 1 machinery cast	15.00 to 16.00

St. Louis

ST. LOUIS, July 8.

Pig Iron.—One sale of consequence was reported here this week, and that was of 1000 tons of Northern No. 2 by a St. Louis manufacturer to an outside concern, the price for which was not given. Outside of that, there has been practically nothing done. The steel plant of the National Enameling & Stamping Co. closed on July 1 for two months. The only companies having open hearths running now are Scullin Steel Co., where one of 10 furnaces is operating, and American Steel Foundries, where four of the 10 are in operation. These and other consumers are fairly well stocked. The furnace of the St. Louis Coke & Chemical Co. is still in blast.

We quote delivered consumers' yards, St. Louis:

Northern malleable	$22.80 to $23.30
Basic	22.80 to 23.30
Southern foundry, sil. 1.75 to 2.25	26.24 to 26.74

Finished Iron and Steel.—The reduction in steel prices, effective last Tuesday, fell flat here, and did not result in the sale of one ton of material. While it is generally regarded that steel prices have been sufficiently reduced, the labor market is still up, and the building trades here have refused to reduce their wages. However, plans for some construction are going right ahead. The principal items in the structural field are 237 tons of rerolled bars for a hotel at Grand and Lindell boulevards, F. J. Cornwell, builder, and 1100 tons of structural steel for the Motor Transport division for the army at Fort Leavenworth, Murch Brothers, St. Louis, contractors. Steel requirements will soon be known for the new Federal Reserve Bank Building, Mauran, Russell & Crowell, architects. Approximately 1500 tons of structural steel will be used in the new Scottish Rite Cathedral, which also has not yet reached the contract stage. A close survey of the railroad situation revealed that the prospects for their buying are no better than they have been for the last few months. Warehouse business is slow, and further reductions have been made.

For stock out of warehouse, we quote: Soft steel bars, 3.02½c. per lb.; iron bars, 3.02½c.; structural shapes, 3.12½c.; tank plates, 3.12½c.; No. 10 blue annealed sheets, 3.77½c.; No. 28 black sheets, cold rolled, one pass, 5c.; No. 28 galvanized sheets, 6c.; cold drawn rounds, shafting and screw stock, 4.45c.; structural rivets, $4.12¼ per 100 lb.; boiler rivets, $4.22½; tank rivets, 7/16 in. and smaller, 60-10 per cent off list; machine bolts, large, 55 per cent; small, 60 per cent; carriage bolts, large, 50-5 per cent; small, 55 per cent; lag screws, 60 per cent; hot pressed nuts, square or hexagon, blank, $3.25; and, tapped, $3.00 off list

Coke.—With most of the foundries not melting, and it is problematical when there will be a general resumption, there is very little demand. Standard Connellsville beehive foundry is quoted at $5 ovens, or $10.04 delivered St. Louis, which price is being met by Granite City by-product coke. Laclede by-product foundry is quoted at $11.50 ovens, or $11.70 delivered anywhere in the industrial district.

Old Material.—Outside of relaying rails there is no demand for old material. St. Louis dealers are interested in an inquiry for 1000 tons of 60 lb. from New Orleans, presumably for export. Railroads continue to submit lists, offering old material, those closing next week being the Mobile & Ohio, 1000 tons; Northern Pacific, 750 tons, and Great Northern, 500 tons, while the Big Four has an open list. Dealers here are well stocked, and are not interested in these offerings, nor are consumers, and it is believed that no reasonable offers will be made here on railroad lists.

We quote dealers' prices, f.o.b. consumer's works, St. Louis industrial district and dealers' yards as follows:

Per Gross Ton

Iron rails	$12.50 to $13.00
Steel rails, rerolling	12.00 to 12.50
Steel rails, less than 3 ft	11.50 to 12.00
Relaying rails, standard section, subject to inspection	27.00 to 29.00
Cast-iron car wheels	12.00 to 12.50
No. 1 railroad heavy melting steel	11.00 to 11.50
No. 1 heavy shoveling steel	9.50 to 10.00
Ordinary shoveling steel	9.00 to 9.50
Frogs, switches and guards, cut apart	11.00 to 11.50
Ordinary bundled sheet	4.00 to 4.50

Per Net Ton

Heavy axle and tire turnings	5.00 to 5.50
Iron angle bars	10.50 to 11.00
Steel angle bars	9.00 to 9.50
Iron car axles	17.50 to 18.00
Steel car axles	12.00 to 12.50
Wrought iron arch bars and transoms	12.50 to 13.00
No. 1 railroad wrought	9.00 to 9.50
No. 2 railroad wrought	8.50 to 9.00
Railroad springs	10.00 to 10.50
Steel couplers and knuckles	10.00 to 10.50
Locomotive tires, 42 in. and over, smooth inside	8.00 to 9.00
No. 1 dealers' forge	6.50 to 7.00
Cast iron borings	6.00 to 6.50
No. 1 busheling	9.00 to 9.50
No. 1 boilers cut in sheets and rings	6.00 to 6.50
No. 1 railroad cast	11.50 to 12.00
Stove plate and light cast	10.50 to 11.00
Railroad malleable	9.00 to 9.50
Agricultural malleable	9.00 to 9.50
Pipes and flues	6.50 to 7.00
Heavy railroad sheet and tank	6.00 to 6.50
Light railroad sheet	3.50 to 4.00
Railroad grate bars	7.00 to 7.50
Machine shop turnings	4.00 to 4.50
Country mixed iron	6.50 to 7.00
Uncut railroad mixed	8.00 to 8.50
Horseshoes	10.00 to 10.50
Railroad brake shoes	7.50 to 8.00

Birmingham

BIRMINGHAM, ALA., July 9.

Pig Iron.—From 4000 to 6000 tons of Birmingham iron was booked during the week. The new base seems to be $20.50 for 500 tons and over with $21 and $21.50 for car loads. The market may be said to be down another 50c. with probability that desirable business may now be booked at $20 base. Among other purchases was one of 500 tons by the Sanitary Mfg. Co. and one of like amount by the Southern Pacific Railroad. One maker sold lots of 200, 500 and 1000 tons and another did a week's business of about 1300 tons in relatively small lots. The tendency to buy seems to have increased owing to depleted state of stocks on consumers' yards. Stocks on furnace yards in Alabama July 1 and June 1 were as follows: foundry, 123,000 and 132,000; machine cast, 47,000 and 44,000; basic, 61,000 and 58,000; total 232,000 and 235,000. The total decrease of 3000 tons is not regarded with as much significance as the reduction of 9000 tons in merchant foundry, especially when it is borne in mind that only one merchant stack will be active after the close of this week, the Alabama Co. banking or blowing out on July 15. The Woodward Iron Co. will then be the only operating merchant furnace. Alabama operators seem determined not to take any more losses on iron hereafter made and will not resume unless costs or freights to competitive points go down. The district expects more pipe iron buying after the award of the Detroit and Akron contracts. The Tennessee company is down to four stacks, all on basic, but one banked stack is expected to resume in two weeks. Increased basic iron stocks will be carried for home purposes, it is presumed, and are not regarded as in the market.

We quote per gross ton f.o.b. Birmingham district furnace, as follows:

Foundry, sil. 1.75 to 2.25	$20.50 to $21.00
Basic	19.50 to 20.00
Charcoal	35.00

Cast Iron Pipe.—There was very little new in the high pressure pipe market last week, small orders from Middle Western cities being the principal business. The Akron award is expected this week. Nominal base is $45, but real base is nearer $40. The $40 base on soil pipe continues to be observed very generally with some under-cutting.

Finishing Mills.—Bridge and structural steel plants

in the Birmingham district report a business that keeps them fairly busy. The Tennessee company has been operating its structural mill steadily. Wire drawing mills are at about 30 per cent. The Tennessee company's rail mill is kept going at normal by foreign and domestic orders. Steel hoop, tie and band mills operate intermittently on order accumulations, working two weeks and then shutting down for as many more.

Old Material.—Users of steel scrap are slow in taking their ordered quota. The scrap market has been stagnant so long that there is apparently little interest in quotations.

We quote per gross ton f.o.b. Birmingham district yard as follows:

Steel rails	$10.00 to $11.00
No. 1 steel	9.00 to 10.00
No. 1 cast	16.00 to 17.00
Car wheels	16.00 to 17.00
Tramcar wheels	15.00 to 16.00
No. 1 wrought	13.00 to 14.00
Stove plate	9.00 to 10.00
Cast iron borings	6.00 to 7.00
Machine shop turnings	6.00 to 7.00

New York

NEW YORK, July 12.

Pig Iron.—Increased inquiries and a fair number of sales of moderate tonnage have given a more cheerful aspect to the market. One firm has received inquiries amounting to about 4000 tons, all for small tonnages. Another firm has sold 900 tons of foundry grades in two lots for July delivery, 500 tons of No. 2X for delivery within three months and two lots of 250 tons each for spot delivery, also 1000 tons of basic for immediate delivery. The inquiry for 1000 tons of basic for the American Steel & Wire Co.'s Worcester plant is still pending. Another inquiry is for 500 to 600 tons of foundry grades for the remainder of the year. An inquiry for 1000 tons for export is not taken very seriously. As to prices, little is being said by sellers, as it is recognized that the market is weak. The most encouraging feature to them is that stocks of foundrymen are being so reduced that when sales are made they are almost invariably accompanied by requests for prompt delivery.

We quote delivered in the New York district as follows, having added to furnace prices $2.52 freight from eastern Pennsylvania, $5.46 from Buffalo and $6.16 from Virginia:

East. Pa. No. 1 fdy., sil. 2.75 to 3.25	$25.52 to $26.52
East. Pa. No. 2X fdy., sil. 2.25 to 2.75	24.52 to 25.52
East. Pa. No. 2 fdy., sil. 1.75 to 2.25	23.52 to 24.52
Buffalo, sil. 1.75 to 2.25	25.46 to 26.46
No. 2 Virginia, sil. 1.75 to 2.25	29.16 to 30.16

Ferroalloys.—With the exception of inquiries for a few carloads of ferromanganese, there is no activity. Domestic ferromanganese is obtainable at $70 to $75, delivered, while the nominal price for the British alloy is $75, seaboard, but there has been no real test of the market on either domestic or import iron. Spiegeleisen is dull and a variety of quotations, ranging from $26 to $30, furnace, have been made on the few small inquiries that have come to the attention of selling agents.

Ferromanganese, domestic, delivered, per ton	$70.00
Ferromanganese, British, seaboard, per ton	$75.00
Spiegeleisen, 20 per cent, furnace, per ton	$26.00
Ferrosilicon, 50 per cent, delivered, per ton	$67.50 to $70.00
Manganese ore, foreign, per unit, seaboard	22.50c.

High Speed Steel.—The market continues unchanged and prices largely nominal. While most producers are quoting 90c. to $1 per lb. for 18 per cent tungsten high speed steel, sales are reported at 85c. per lb. and lower.

Cast-Iron Pipe.—Business continues satisfactory. An occasional foreign inquiry comes before the trade, but because of conditions of exchange and demands for long time credits, this business is not looked upon with favor. Quotations remain the same, or for carload lots, f.o.b. New York, as follows: 6-in. and larger, $52.30; 4-in. and 5-in., $57.30; 3-in., $67.30, with $4 additional for Class A and gas pipe.

Warehouse Business.—All warehouses in this district, since July 8, have been quoting on a lower schedule. This is the second price revision in about two weeks and brings the spread between mill and warehouse down to about $13 per ton based on 1.90c. per lb., Pittsburgh, for bars. These are now quoted at 2.93c. per lb. for both iron and soft steel and structural material and tank plates are 3.03c. per lb. Hoops are 4.03c. per lb. and bands 3.63c. per lb. Tire steel, iron finish, is 2.93c. per lb. with smooth finish at 3.13c. per lb. Sheets have also undergone a reduction. Blue annealed, No. 10 gage are generally 3.68c. per lb., a drop of about 20c. per 100 lb. Black sheets are down about 25c. per 100 lb. to 4.50c. per lb. for No. 28 gage and galvanized sheets are consistently quoted at 5.50c per lb. Brass and copper items have registered a slight drop of about ½c. per lb. on brass products and ¼c. per lb. on copper. Although mill prices on standard steel pipe and boiler tubes have been reduced from $4 to $6 per ton on the former and from $4 to $12 per ton on the latter, a new schedule of quotations on this basis has not yet been prepared by the warehouses. Orders, however, are now being booked at a proportionate reduction. We quote prices on page 124.

Old Material.—Although prices of finished steel are being reduced, the level of scrap prices has not changed to any extent. The only notable change is that of old car wheels, which have declined $2.50 a ton. One broker is paying 25c. a ton more for iron and steel shafting than a week ago, his other prices being the same.

Buying prices per gross ton, New York, follow:

Heavy melting steel	$6.50 to $7.50
Rerolling rails	9.50 to 10.00
Relaying rails, nominal	37.50 to 40.00
Steel car axles	9.50 to 10.00
Iron car axles	16.00 to 17.00
No. 1 railroad wrought	10.50 to 11.00
Wrought iron track	7.25 to 7.50
Forge fire	5.00 to 5.50
No. 1 yard wrought, long	8.50 to 9.00
Light iron	2.00 to 2.50
Cast borings (clean)	3.50 to 4.00
Machine-shop turnings	2.50 to 3.50
Mixed borings and turnings	2.50 to 3.00
Iron and steel pipe (1 in. diam., not under 2 ft. long)	7.00 to 7.50
Stove plate	8.50 to 9.00
Locomotive grate bars	8.50 to 9.00
Malleable cast (railroad)	7.00 to 7.50
Old car wheels	10.00 to 10.50

Prices which dealers in New York and Brooklyn are quoting to local foundries, per gross ton, follow:

No. 1 machinery cast	$16.00 to $17.00
No. 1 heavy cast (columns, building materials, etc.), cupola size	14.00 to 15.00
No. 1 heavy cast, not cupola size	13.00 to 14.00
No. 2 cast (radiators, cast boilers, etc.)	9.50 to 10.50

Finished Iron and Steel.—About the only effect of the price announcements of July 4 seems to have been that a number of small orders were released, though not totaling much in the aggregate. These were mainly purchases which had been held up as long as possible waiting for some decided reduction. At present the market is exceedingly quiet with buyers very generally of the opinion that still lower quotations are likely, while railroad car repair work appears to be the most promising item in business betterment. Not much of this business is expected for two weeks. The number of bad order cars has now risen to 385,000, and there are many who feel that a car shortage may be experienced in the fall. The Wabash placed 300 steel hopper repairs with the Western Steel Car & Foundry Co. Bar iron makers are quoting 1.90c., Pittsburgh, although a 1.85c. quotation is noted. In fabricated steel lines the new outstanding proposition is a 5000-ton structure for the Central Square Realty Co., New York, on the Grand Central area, a building which is expected to develop keen competition. Manchester, N. H., is in the market for a 1000-ton highway bridge. The Central Railroad of New Jersey is readvertising for an 800-ton bridge, and other new work includes a training school at Cortland, N. Y., 1000 tons, and a telephone building at Stamford, Conn., 300 tons. Awards include the East Junior High School, Norfolk, 775 tons, to the Bethlehem Steel Fabricators, Inc.; two bridges for the Boston & Maine, 250 tons, to the Phoenix Bridge Co.; bridge work for the Philadelphia & Reading, 270 tons, to the Bethlehem Steel Bridge Corporation; a telephone building, Philadelphia, 250 tons, to the Montgomery

Steel Co., and a building in Washington Square, New York, 300 tons, to the Paterson Bridge Co. The concrete portion of the Cohoes-Troy bridge will require 360 tons of reinforcing bars.

We quote for mill shipments, New York, as follows: Soft steel bars, 2.28c.; plates, 2.28c. to 2.38c.; structural shapes, 2.38c.; bar iron, 2.28c.

Cincinnati

CINCINNATI, July 11.

Pig Iron.—The feature of the market during the week was a further recession in prices of iron from all districts. On a sale of 1000 tons of Southern to a melter in this territory, $20, Birmingham, was done. The same melter is reported to have bought 500 tons of Northern iron at a price equivalent to $18.50, Chicago. A sale of 700 tons of southern Ohio iron, part of which was malleable, was made to a melter at $21, Ironton. Part of this tonnage was off grade material, however, and standard foundry iron from this district is quoted at $21.50, furnace. Valley and Lake Front furnaces are quoting $19.50 and $20 respectively. There is very little activity, and with the exception of the above reported sales, little buying is being done. Shipments from furnaces are showing a slight increase as compared with the month of June, but are still very light.

Based on freight rates of $4.50 from Birmingham and $2.52 from Ironton, we quote f.o.b. Cincinnati:

Southern coke, sil. 1.75 to 2.25 (base)	$24.50
Southern coke, sil. 2.25 to 2.75 (No. 2 soft)	25.00
Ohio silvery, 8 per cent sil	38.02
Southern Ohio coke, sil. 1.75 to 2.25 (No. 2)	24.02
Basic, Northern	22.52
Malleable	24.02

Finished Material.—The price reductions announced during the week have not stimulated business to as great an extent as hoped for. There has been a little more activity, however, and several inquiries for 200 tons are reported. Some specifications have been received for small tonnages of various steel products, but in the main the attitude of the trade seems to be that the present prices may not hold for any considerable time, and that with conditions as they are at present, nothing would be gained by placing orders. Little new business has been placed. The general contract for the stadium for Ohio State University, Columbus, has been let to the E. H. Latham Co., Columbus, which was low bidder on the project. No award of the steel has been made. The Smallman-Brice Construction Co. has been awarded the general contract for the addition to the Masonic Temple at Birmingham, Ala., involving about 700 tons. Very few new projects are coming up. Some are in prospect, however, including a small bridge at Aurora, Ind., for the public works department and a new union station at Covington, Ky., for the L. & N. and C. & O. railroads. All the sheets mills in this territory are closed, the American Rolling Mill Co., Middletown, having closed on Thursday night after a week's run.

Warehouse Business.—Small orders for immediate shipment are the ruling activity. Local jobbers are expected to announce, some time next week, new prices with reductions corresponding to those made by the mills. It is not expected, however, that the prices on wire and wire nails will be changed for at least a couple of weeks. Jobbers continue to quote:

Iron and steel bars, 3.35c. base; hoops and bands, 4.05c. base; shapes, 3.45c. base; plates, 3.45c. base; reinforcing bars, 3.42½c. base; cold rolled rounds, 1½ in. and larger, 4.25c.; under 1½ in. and flats, squares and hexagons, 4.75c.; No. 10 blue annealed sheets, 4.10c.; No. 28 black sheets, 5c.; No. 28 galvanized sheets, 6.25c.; wire nails, $3.50 per keg base; No. 9 annealed wire, $3.60 per 100 lb.

Coke.—Some activity is noted in the coke market. A local agency reports two sales of 2500 tons each, and another of 500 tons. One inquiry for 900 tons and two for 300 tons each, are being figured on. Prices have not materially changed, though one producer in the Connellsville field has cut foundry from $5 to $4.50.

Old Material.—There is practically no activity in the scrap market, one dealer stating that it is the quietest in the past 20 years. Most of the mills in this territory are closed, and those that are running are not taking in material. Prices are, if anything, tending to lower levels, but in the absence of trading are quotably unchanged.

We quote dealers' buying prices:

Per Gross Ton		
Bundled sheets	$5.00 to	$7.00
Iron rails	11.00 to	12.00
Relaying rails, 50 lb. and up	25.00 to	26.00
Rerolling steel rails	10.00 to	11.00
Heavy melting steel	8.50 to	9.50
Steel rails for melting	9.00 to	10.00
Car wheels	11.50 to	12.50
Per Net Ton		
No. 1 railroad wrought	8.50 to	9.50
Cast borings	3.50 to	4.00
Steel turnings	2.00 to	2.50
Railroad cast	11.00 to	12.00
No. 1 machinery	12.00 to	13.00
Burnt scrap	6.50 to	7.50
Iron axles	17.00 to	17.50
Locomotive tires (smooth inside)	8.50 to	9.50
Pipes and flues	6.00 to	6.50

Cleveland

CLEVELAND, July 12.

Iron Ore.—The ore market is virtually at a standstill. Sellers have been working on an inquiry for 150,000 tons from St. Louis, but the consumer has decided not to purchase this ore, at least at present. The inquiry may be revived later. Ore shipments from Lake Erie docks during June were 2,028,548 gross tons, showing a gain over May, but only about one-half of the amount shipped during the same month last year, when dock shipments were 4,011,067 tons. Shipments from the docks during the season until July 1 were 3,746,667 tons as compared with 8,258,673 tons during the same period last year. The balance on Lake Erie docks July 1 increased over 300,000 tons as compared with June 1, being 8,417,725 tons as compared with 7,005,050 tons on July 1 last year. Receipts at Lake Erie ports during June were 2,774,580 tons, and for the season, 4,455,480 tons, as compared with 10,331,435 tons up to July 1 last year. Furnaces at Lake Erie ports received 423,384 tons, as compared with 1,600,593 tons during June last year. Receipts at other than Lake Erie ports until July 1 were 1,376,045 tons as compared with 4,477,636 tons during the same period in 1920. There is still talk of further wage reductions in mines. One company having a mine in an isolated location has resumed operations with the 1914 wage scale. In this case the mining company did not plan to operate this year but expressed its willingness to start up the mine and stock the ore if the men desired to go to work at the 1914 wage scale. The miners agreed to the plan. The mining company will not attempt to sell this ore for delivery this season.

We quote delivered lower lake ports: Old range Bessemer, 55 per cent iron, $6.45; Old range non-Bessemer, 51½ per cent iron, $5.70; Mesabi Bessemer, 55 per cent iron, $6.20; Mesabi non-Bessemer, 51½ per cent iron, $5.55.

Pig Iron.—The demand for pig iron has been better for the past week than for some time, but prices have again declined $1 a ton and there seems to be no bottom to the market. A number of sales of foundry iron in small lots were made at $20 to $20.50 for No. 2. However, $20 now seems to represent the top of the market, as lower quotations have been made and there are reports that a price as low as $19 has appeared in the Valley district. For Cleveland delivery, quotations have declined correspondingly. A Valley consumer is reported to have purchased 500 to 1000 tons of basic iron at $19. Two other basic inquiries have appeared, each for 5000 tons. The largest sale reported during the week was 2500 tons of No. 2 foundry iron taken by a Cleveland interest at $20, for shipment by an eastern New York furnace to New England over a period of three months. Another interest during the week sold 1500 tons of foundry iron and a third 1200 tons in lots of from carloads to 200 tons at $20 to $20.50. The American Radiator Co. again came in the market for about 1100 tons for its Detroit, Springfield and Titusville plants, and $20 is understood to have been shaded on this inquiry. Low phosphorus pig iron has further declined. We note the sale of two 100-ton lots, one at $36.50 and the other at $37. A carlot sale of electrolytic 10 per cent Bessemer ferrosilicon was

made at $38. Pickands, Mathers & Co. to-day blew out their Perry furnace at Erie, Pa.

We quote delivered Cleveland as follows, based on the new freight rate, there being a 56c. switching charge for local iron, a $1.96 freight rate from Valley points, a $3.36 rate from Jackson and $6.67 from Birmingham:

Basic	$20.96 to	$21.96
Northern No. 2 fdy., sil. 1.75 to 2.25	21.00 to	21.50
Southern fdy., sil. 2.25 to 2.75		28.92
Ohio silvery, sil. 8 per cent		38.86
Standard low phos., Valley furnace	36.50 to	37.00

Finished Iron and Steel.—The price reductions have not stimulated buying, but apparently have resulted in the holding up of some orders, particularly in the building field. Many buyers are not inclined to take the new prices seriously and the market is in about as unsettled a state as before the formal reductions. The volume of orders and inquiries continues light. Plates particularly are weak and inquiries from tank shops for 1400 tons for stills, 900 tons for the Standard Oil Co. and 500 tons for the Sinclair Oil Co. are reported to have brought out quotations below 1.80c. Only the 500-ton lot has so far been placed. For small lots of plates a 1.90c. quotation is fairly common, although some mills are adhering to the 2c. price. Various unconfirmed reports are that the 1.90c. price is still being quoted on structural material. An Ohio fabricating shop is inquiring for 2500 tons of plates, bars and structural material and is looking for a price of 1.80c. or lower. No formal price reduction is reported on strip steel and prices on both hot and cold-rolled strips are weak and irregular. The Ford Motor Co. is inquiring for 500 tons of cold-rolled strips and sellers admit that this business is likely to be placed at lower than 4.75c., which has been the prevailing market price. Leading bidders on fabricated steel have brought out unusually low quotations. A Toledo engineering firm has placed 2500 tons for a plant for the United States Sheet & Window Glass Co., Shreveport, La., with the Decatur Bridge Co., Decatur, Ill., at a reported price of $70 a ton, delivered, which is said to be about the pre-war price. The 600 tons for bridges for the Kanawha & Michigan Railroad Co. has been taken by the Mount Vernon Bridge Co. The Pittsburgh Bridge Co. and the Massillon Bridge & Structural Co. have taken two bridges for the Stowe-Fuller Co., requiring 160 tons. Bids have been taken for 700 tons for the Middletown Hotel, Middletown, Ohio. The price on wire rods has been reduced to $42. The reduction in prices has not resulted in any further decline in hard steel reinforced bars, but these had previously declined sharply and are quoted at 1.75c. to 1.80c. The Akron, Canton, Youngstown Railroad, which recently inquired for 600 tons of rails, has announced that it will await a price reduction before placing the order.

Jobbers quote steel bars 2.79c.; plates and structural shapes, 2.89c.; No. 9 galvanized wire, 3.50c.; No. 9 annealed wire, 3.25c.; No. 28 black sheets, 4.25c.; No. 28 galvanized sheets, 5.25c.; No. 10 blue annealed sheets, 3.40c. to 3.55c.; hoops and bands, 3.44c.; cold rolled rounds, 4c.; flats, squares and hexagons, 4.50c.

Sheets.—All the mills have adopted the reduced prices on sheets and so far these prices are apparently being maintained. However, as the demand is very light, there has been no real test of the new prices.

Warehouse Business.—Cleveland jobbers have reduced prices, the reductions corresponding to the cuts in mill prices on various items.

Coke.—One large producer has reduced its prices on standard Connellsville foundry coke from $5 to $4.50. Quotations on this grade range from $4 to $5. A few carlot sales are reported at the latter price.

Bolts, Nuts and Rivets.—There is a little better feeling in the bolt and nut trade owing to the expectation of more railroad buying and an improvement in inquiry from the automobile trade. Several new inquiries have come from the latter source including one from the Ford Motor Co. for 8,000,000 bolts and nuts. Prices have settled down to about the maximum discounts that have been quoted recently, but the cut in steel bar prices has apparently had little effect on the price situation, as this reduction in steel had been anticipated. Rivets are quiet and weak. General quotations now are 3.75c. for structural rivets and 3.85c. for boiler rivets and a reduction in steel bar prices may be reflected in further concessions on rivets.

Old Material.—There is virtually no activity in the market. Mills are not buying, and trading between dealers is limited to a few carlots, as they have very few orders except for material on which mills have held up shipments. There is a little demand for compressed steel for shipment to Weirton and as there is no local demand, this grade has declined 50c. a ton. Cast borings and mixed borings and turnings are also about 50c. a ton lower.

We quote per gross ton delivered consumers' yards in Cleveland and vicinity as follows:

Heavy melting steel	$10.50 to	$11.00
Steel rails, under 3 ft	11.50 to	12.00
Steel rails, rerolling	13.00 to	14.00
Iron rails	11.00 to	12.00
Iron car axles	18.00 to	19.00
Low phosphorus melting scrap	12.50 to	13.00
Cast borings (nominal)	7.00 to	7.50
Machine shop turnings	4.50 to	4.75
Mixed borings and short turnings	6.50 to	7.00
Compressed steel	6.00 to	6.50
Railroad wrought	10.00 to	10.50
Railroad malleable	11.00 to	12.00
Light bundled sheet stampings	3.50 to	4.00
Steel axle turnings	8.00 to	8.50
No. 1 casting	16.00 to	16.50
No. 1 busheling	7.50 to	8.00
Drop forge flashings, over 10 in	5.50 to	6.00
Drop forge flashings, under 10 in	6.00 to	6.50
Railroad grate bars	12.75 to	13.00
Stove plate	12.75 to	13.00
Pipes and flues	6.00 to	7.00

NOT INCREASED

Business at Youngstown Shows no Improvement Due to Lower Prices

YOUNGSTOWN, OHIO, July 12.—Both the Youngstown Sheet & Tube Co. and the Republic Iron & Steel Co. will meet the reductions made by the Steel Corporation of from $2 to $12 a ton on pipe and tubular products and $5 a ton on wire and wire nails. "This is a radical reduction," states President James A. Campbell of the Sheet & Tube company, "but we are compelled to meet the lower prices set by the Corporation or get out of business."

The new steel prices are now being openly quoted by all Valley independent interests, though tonnage had been accepted at the lower levels for some time.

That the concessions have failed to stimulate new business, however, is indicated by the low operating rate for the current week. But six of 46 blast furnaces in the Mahoning and Shenango Valleys are active—two at the Ohio Works of the Carnegie Steel Co., two in the East Youngstown group of the Sheet & Tube Co. and one each of the Republic Iron & Steel Co. and the Brier Hill Steel Co.

Nineteen of the 66 open-hearth furnaces are charged, including nine of the Carnegie Steel Co. units. But one of the three Bessemer plants in the Mahoning Valley—that of the Carnegie company—is active. One of the Valley's four plate mills is under power. The only active sheet mills are those operated by the Newton Steel Co., which has its full quota of 10 in production.

The Youngstown Steel Car Co. at Niles has been asked to bid on repairs to several thousand railroad cars, and the activity of the railways in this respect promises to react favorably on the plate market.

Some improvement is noted in the demand for common and galvanized sheets, especially with non-union interests. This is unquestionably due to the automatic elimination of makers subscribing to the Amalgamated association scale, through expiration of the 1920-21 wage agreement. Union mills accepted a number of orders during the period of suspension and will work off such accumulations when they resume. Reduced prices on sheets are being generally quoted. The full-finished market has dropped $5 per ton in line with other grades, bringing the base price on No. 22 gage auto body stock to 4.70c. Extras are unchanged.

There is little evidence that the plate market will stabilize at the 2c. level, inasmuch as tonnage is moving below this figure. Car repair interests, now the most active influence in the market, are holding off for lower quotations and declare that concessions are being offered for attractive tonnage.

British Iron and Steel Market

Fuel Uncertainty Still Unsettling to Pig Iron—Continental Steel Competition Disturbing

(*By Cable*)

LONDON, ENGLAND, July 12.

Pig iron conditions are in a transitional stage, owing to uncertainty regarding what is to be the future cost of fuel. Certain blast furnaces have been restarting operations to meet urgent needs, but many others will remain idle until fuel prices become stabilized. Number 3 Cleveland foundry iron is being quoted at £6 15s. ($24.44) for July and £7 ($25.34) for August shipments for home trade; but premiums are demanded for export.

In finished material, sentiment is somewhat better, and with more inquiry, but the great bulk of the buying is done on the continent. Some tin plate works have already re-started, but it is improbable that the output will reach any considerable figure until Autumn, though 250,000 boxes of oil sizes are wanted for the East. There is a better inquiry for galvanized sheets, but not much business is being actually placed.

Continental steel is offered freely. Business placed includes German billets at £6 15s. ($24.44) to £7 ($25.34) c.i.f.; Belgian and French billets at £6 2½s. ($22.67) to £6 5s. ($22.63) f.o.b.; German merchant bars at £7 15s. ($28.06) to £8 ($28.96) f.o.b.

Galvanized wire, 8 gage, is quoted at £12 ($43.44) f.o.b.; wire rods, 5 gage, £11 ($39.82), cost and freight to Japan. Wire nails are given as 16½s. ($2.99) cost and freight to Japan. Belgian plates are quoted at £9 10s. ($34.39) f. o. b.; German plates, at £8 10s. ($30.77) f.o.b. For India, an order of 13,500 tons of rails has been booked at £10 2½s. ($36.65) f.o.b.

We quote per gross ton except where otherwise stated, f.o.b. maker's works, with American equivalent figured at $3.62 per £1 as follows:

Durham coke	£2 2	$7.60
Cleveland basic	6 0	21.72
Cleveland No. 1 foundry	6 5	22.63
Cleveland No. 3 foundry	6 0	21.72
Cleveland No. 4 foundry	5 19	21.54
Cleveland No. 4 forge	5 17½	21.27
Hematite	7 0*	25.34
East Coast mixed	8 0 & £7 5*	28.96 & $26.25
Ferromanganese	18 0 & 15 0*	65.16 & 54.30
Ship plates	14 10	52.49
Boiler plates	19 0 to 21 0	68.78 to 76.02
Tees	14 10	52.49
Channels	13 15	49.78
Beams	13 10	48.87
Round bars, ¾ to 3 in.	13 10	48.87
Rails, 60 lb. and up	10 0 to 15 0	36.20 to 54.30
Billets	11 0 to 11 10	39.82 to 41.63
Sheet and tin plate bars, Welsh	10 10	38.01
Galvanized sheets, 24 g.	22 10 to 23 10	81.45 to 85.07
Black sheets	19 0 to 20 0	68.78 to 72.40
Tin plate base box	1 4½ to 1 8	4.51 to 5.07
Steel hoops	17 0	61.54

*Export price.

To Restart Plants Costs Must Not Exceed 75 to 100 Per Cent of Pre-War Basis

LONDON, ENGLAND, June 29.—Whether the new scale of coal mine wages, whatever it may be, will permit coal to be sold at a figure enabling manufacturing operations to be resumed, remains to be seen. That coal getting can be renewed on the old scale is definitely impossible, for many pits are flooded and will not be reopened. The financial position is as unsatisfactory as that of industry, and combined with the appalling taxation, and the unceasing wastefulness and prodigality of the Government, there is an almost entire lack of incentive to capital, while the unwillingness of labor to work assists materially in maintaining a set of conditions which is not paralleled in modern experience.

Labor Inefficiency Evaluated

Some official figures have been issued by Richardsons, Westgarth & Co., marine engineers, setting out their experiences. The comparison between 1913 and 1920 is so striking that it may well be set forth in table form:

Pre-War and Post-War Labor Conditions

	Pre-War	Post-War
Working hours	2,597	2,303
Absenteeism in hours per man per annum	122	258
Actual hours worked per man per annum	2,475	2,045
Average hours per week	50.5	41.8
Hours per day	8½	7

The net result of shortened hours and increased malingering is a loss of 37½ per cent in output, which put in another way means that post-war production is only five-eighths of the pre-war total. The average wage per hour is now about three times greater than before the war, while actual costs are about four times as high. As this is typical of working conditions generally in this country, it needs no words to explain why we are ceasing to count as an industrial nation.

On all hands are complaints that our business is being taken by overseas competitors, and the announcement that America has picked up a contract for steel axles from that closely kept preserve of British manufacturers, the India State Railways, has caused some fluttering in the dovecotes, especially as the American price is said to be 30 per cent under the lowest British tender. The Australian Government order for rails (10,000 tons) has now been placed with the Continent. An order for 60,000 tons of steel rails for Russia has also been lost to this country, and has been taken by Germany. There is indeed no end to this process under existing conditions.

The National Federation of Iron & Steel Manufacturers, representing employers, and the Steel Trades Confederation, representing the workmen, have now presented to the Premier a statement regarding the condition of our iron and steel industry. According to this the chief factor affecting European competition is the low level of real wages in Germany, but it is added that British industry cannot restart until costs are reduced to a level not far removed from those ruling on the Continent, and it is the considered opinion of the employers that the British iron and steel works will not be able to restart unless fuel, as well as other items of cost, is reduced to a level not higher than 75 per cent to 100 per cent above the pre-war level.

The British Cast Iron Research Association has been formed as a company to conduct research and experimental work in connection with the cast iron trades and industries. The management is vested in a council, and among the first members are Lord Weir of the Holm Foundry, Cathcart, Glasgow (president), and D. Vickers (chairman of Vickers). The secretary is T. Vickers, and the registered office at Central House, New Street, Birmingham.

With regard to shipbuilding, a prominent builder here stated that there were at present 10,000,000 tons more shipping afloat than before the war, which meant that for many years ships would not be wanted except for special purposes.

Probable Effect of the President's Message

WASHINGTON, July 12.—The message of the President to the Senate this afternoon, meant to hasten economic and industrial readjustments, is considered to have killed proposed legislation for the soldier bonus. In substance, it calls for speedier action on legislation along the line previously recommended with modifications. The more essential parts of the program look to elimination of the excess profits tax and the fixing of a corporation tax with a rate of approximately 15 per cent. Congress is expected to devote its time more closely from now on to two important purposes, tariff and tax, but it is a question whether tax revenue revision will be given precedence over the tariff, although there is much support for this plan.

FOREIGN RAILROAD BUYING

Mexico Buys Locomotives—Bidding Closed on 30 Locomotives for Chile—Inquiry from India

NEW YORK, July 12.—Activity of foreign trade today compared with the activity of a few months ago shows a marked improvement, although transactions are still few and orders small, with the exception of foreign government railroad buying. This branch of export trade is quite active. The National Railways of Mexico, which are in need of equipment of all kinds, have placed orders with the American Locomotive Co. and the Baldwin Locomotive Works for a total, when arrangements are finally completed, of 90 locomotives, about 45 to each builder, of which about 40 are Consolidation type, 30 Mikado type and 20 Pacific type. This is the second large purchase of the Mexican railroads, the previous one consisting of 97 second-hand locomotives of a heavy type, of which 91 were bought from the Illinois Central Railroad and 6 from the Southern Railway.

On July 7 and 8, the Chilean State Railways, with a New York office at 141 Broadway, opened in Chile the bids submitted on its tender for 30 locomotives and a number of freight and passenger cars. The tenders on about 35 locomotives, 300 freight and 40 passenger cars for the Pekin-Kalgan Railroad and the Pekin-Suiyan Railroad in China, which were to be opened June 29 and 30, have been postponed indefinitely. It is reported that this contract will probably be let without public bidding.

Japan Buys in Germany

The 450 steel poles for the South Manchurian Railroad, recently placed with a New York exporter, are part of a total of about 4000 such poles, which will eventually be purchased by this railroad. Japanese buyers are purchasing in Germany, influenced by the low quotations and the favorable exchange rate, but recent reports of the extensive use of shell steel and other scrap in the present production of German steel, is believed by the Japanese to affect the quality of German products and despite the low prices there is a tendency to refrain from buying there. Orders for light gage black sheets and bars continue to be placed by Japanese consumers and there are inquiries for sheets and bars in the market from Cuba.

South America is also showing some railroad activity. There is about 5000 tons of 55-lb. rails in the market from Buenos Aires, Argentina, on which it is reported that a bid of £10 17s. ($39.43) c.i.f. Buenos Aires has been submitted by a Belgian seller. As it would be difficult even with present market conditions in the United States for an American mill to approach this quotation, it is generally expected that the business will go to Europe. Cuban railroads have issued tenders for 3300 tons of 60-lb. rails, which will be closed shortly.

Inquiries From India

McLeod & Co., 44 Whitehall Street, New York, are handling an inquiry from India calling for conveying machinery for use in factories, warehouses and mines. Printed matter and estimated prices for export have been requested by the exporter. The Burma Finance & Mining Co., Ltd., Hermyingi, India, contemplates the erection of a small crushing and concentrating mill to treat from 150 to 200 tons of ore per day. During 1920 the Hermyingi mine produced 1226 tons of mixed wolfram and cassiterite concentrate.

Specification No. 95, issued by the Commissioners of Electricity of the State of Victoria, Australia, covering steel work, etc., for a new power house at Morwell, has been amended to accommodate 5 generators of 12,500 kw. each. The engine room will have 8 bays. The crane capacity will be 60 tons. The amended tenders should be obtained from and mailed to the Australian Trade Commissioner, 161 Broadway, New York, before Aug. 31. The time limit on specification No. 99 has been extended to Aug. 31 by the Commissioners in Melbourne.

The bridge over the Yellow River in China, requiring something like 40,000 tons of steel, which has been figured on in the past several months by builders in no less than 19 countries, including several firms in the United States, is expected to go to the Continent of Europe on the score of price. There are some doubts, however, about the financing of this great project.

It is now expected that the rails for the Pekin-Mukden Railway, which have been before the rail makers of Europe and the United States for some time, will be let in the latter part of this month. The tonnage originally was 11,000, but it is now expected that 17,000 tons will be bought.

ARGENTINE RAILS

Orders for 9500 Tons Awarded to La Providence Works—British Prices Forced Down

(*Special Correspondence*)

BRUSSELS, BELGIUM, June 29.—The depression in all markets in Belgium is intense, many large establishments, considered to be in good condition, having closed down. New construction is at a standstill. Coke prices are still too high, despite reductions, and further cuts will probably be made in coke as well as in iron and steel generally. British manufacturers are making an effort, thus far unsuccessful, to reduce the importation of material from continental sources, particularly bars. Steel bars, produced in England, which have been selling up to £33 per ton, are down to £22 10s. per ton, one cut alone having totaled £6. Belgian pig iron has been shipped into England at £7 per ton, causing the British price to drop to £5 15s.

Rails Sold to Argentina

Against severe competition, the order for 9500 tons of rails for Argentine railroads was booked by La Providence works at 469 fr. ($35.66, with 1 fr. = 7.6c.) per ton, c.i.f. Santa Fe. The Providence works also took the fish plates at 620 fr., the bolts at 1200 fr. and the spikes at 890 fr. The following table shows the bids submitted by mills in various countries:

Ougree-Marihaye works (Belgium)	528 fr.
Sambre et Moselle works (France)	660 fr.
Usines de Wendel (France)	528 fr.
Acieries de Longwy (France)	532 fr.
Normand de Metallurgie (France)	562 fr.
Normand de Knutange (France)	562 fr.
Consolidated Steel Corporation	$62.15
United States Steel Products Co.	$65.00
Krupp works (Germany)	2550 m.
Westphalian works, Bochum (Germany)	£11 9s.
Deutsche Luxemburgische (Germany)	2500 m.
Phoenix G. (Germany)	£11 10s. 6d.
W. H. Muller & Co. (Germany)	$48.00
Bidermann & Co., Prague (Bohemia)	$54.50

The Argentine railroads are reported to be about to issue a new tender for about the same tonnage of rails as the one just placed.

Worcester Companies Consolidated

The Arcade Malleable Iron Co. and the Baldwin Chain & Mfg. Co., both at Worcester, Mass., have been consolidated. The stock interests of the two companies have been much the same for some time. The former officers of the Arcade Co., Geo. T. Dewey, president; H. P. Blumenauer, vice-president, and Wm. H. Gates, treasurer, will hold the same offices in the consolidated company. The business of this company will be continued separately on the same basis as previously, with the additional foundry facilities secured by the recent purchase of the adjoining property of the Richard French Iron Works. The management of the Arcade plant will remain unchanged, with H. P. Blumenauer continuing as general manager, A. L. Scott, sales manager and John Jordan, plant manager.

The American Manganese Mfg. Co., has posted notice of a 40 per cent reduction in wages, effective July 1. This cut, which affects miners, coke-plant and blast furnace workmen, means that common labor goes from 36c. to 22c. per hour. The company last year paid common labor as high as 48c. per hr.

BASIC DAY ABROGATED

Steel Corporation Makes Announcements As to Prices and Overtime Pay

Judge E. H. Gary, chairman United States Steel Corporation, last week made two important announcements. The first adopted the prices announced July 4 by the Bethlehem Steel Co., and abolished the basic 8-hr. day in the following words:

We have decided to recommend to our subsidiary companies that they reduce selling prices to correspond with the existing prices of competitors. These include products and prices as follows:

Bars	$1.90	Blue annealed sheets	$2.65
Structural shapes	2.00	Black sheets	3.50
Plates	2.00	Galvanized sheets	4.50
Sheet bars	35.00	Tin plate	5.75
Billets, 4 x 4	33.00	Skelp	2.00
Slabs	34.00		

Also pipe and possibly some other products relatively.

Also to abrogate, as of July 16, 1921, the so-called "basic" or "overtime" day put into effect during the war as an emergency measure.

July 6, 1921.

Further Price Changes

The second announcement was made Friday, July 8 and was as follows:

Referring to our statement of July 6 instant concerning selling prices, and in accordance therewith, we have decided to recommend to subsidiary companies that the present prices of tubes be reduced as follows:

	Per Ton
Standard steel pipe:	
¼ in. and ⅜ in.	$2.00
½ in. to 6 in., inclusive	4.00
7 in. to 12 in., inclusive	6.00
Sizes above 12 in.	4.00
Boiler tubes:	
1¾ in.	4.00
2 in. to 3 in., inclusive	12.00
3¼ in. and larger	10.00

and that wire nails be reduced to $2.75 per keg base, plain wire to $2.50 per 100 lb. base, and other wire products relatively.

July 8, 1921.

Abrogating the Basic Eight Hour Day

The number of men employed 10 and 12 hours varies greatly at different times according to the pressure upon the mills for output. At the present time, owing to the efforts of the Steel Corporation to provide work for as many men as possible, few are working longer than eight hours, and the total curtailment in wages falls far short of what it would be if mills were in full operation. For example, in the Pittsburgh district Steel Corporation subsidiaries, when in full operation, gave employment to about 125,000 men, but at present the number is much smaller as the corporation plants are not running more than 35 per cent capacity. The rate of the Steel Corporation is 37c. per hour and that of the independents 30c.

Effect in the Youngstown District

YOUNGSTOWN, OHIO, July 12.—In so far as actual working conditions are concerned, elimination of the basic 8 hour day will have comparatively little effect upon the steel industry in the Mahoning Valley. Independents are virtually on an 8 hr. basis, which has been generally adopted in order to afford employment to a larger number of men during the current period of slack operations.

In the Carnegie Steel Co. plants, Youngstown district, the immediate effect will be to reduce wages. Operating officials state that there will be no change in working hours with exception that some of the shopmen have been reduced from 10 to nine hours because of the condition of business. Effective from July 16, under the order, men working 12 hours will be paid for 12 hours work, instead of 14 as heretofore, while employees working 10 hours will be paid for 10, instead of 11. This will reduce the common labor rate for 12 hours from $5.18 to $4.44 and for 10 hours $4.07 to $3.70, on the basis of 37c. per hour.

An additional wage reduction by the leading interest is anticipated by steel makers in this district, in view of the cut by independents effective July 16, to 30 cents per hour for common labor.

In its Mahoning Valley plants, the Ohio Works, Upper and Lower Union mills, McDonald bar mills and the Niles blast furnace, the Carnegie company ordinarily employs 5000 men, many of whom will be affected. Large numbers are also employed by the Steel Corporation in plants of subsidiary companies in the Shenango Valley.

President James A. Campbell of the Youngstown Sheet & Tube Co. points out that the more important steel producing groups throughout the country have now abolished the basic eight hour day and do not pay higher rates for time over eight hours. He states the institution of the shorter day by the Sheet & Tube company is merely temporary and that the longer hours will be restored when business conditions become more nearly normal.

Another Wage Reduction

YOUNGSTOWN, OHIO, July 12.—For the second time this year, Valley independent steel companies have reduced wages, effective July 16, the reduction in common labor approximating 19 per cent. The new common labor rate will be 30c. and it is predicted that it will still further decline to 25c. before the wage liquidation is completed. The new rate compares with a war peak of 47c. with time and a half for overtime.

An independent official expresses little hope of the steel market stabilizing at the current levels. Any further decline in prices will have to be offset by a further downward readjustment in wage rates, he declares. "We have cut wage rates to offset some of the loss from the price reduction. If we had not reduced wage rates we would have been obliged to suspend operations completely, as we could not have sold our product at the lower prices and continued wages on the former basis." The affected companies are the Sharon Steel Hoop Co., Republic Iron & Steel Co., Brier Hill Steel Co., Youngstown & Tube Co. and Trumbull Steel Co.

Sharon Steel Hoop Co. Reduces

Pittsburgh, July 12.—The Sharon Steel Hoop Co., announces a reduction in the wage for common labor from 37c. to 30c. per hour effective July 16. Tonnage rates and salaries will be revised downward in like proportion. Other independents are expected to make a similar cut. The Sharon Steel Hoop Co. eliminated time and one half for overtime on May 16 last.

Bids on Plates for the Navy

WASHINGTON, July 12.—On bids for 950 tons of plates for the Portsmouth, N. H., Navy Yard, opened yesterday by the Bureau of Supplies and Accounts, the Worth Steel Co. was lowest at a price equivalent to 2c., Pittsburgh, on 90 per cent of the tonnage, ranging up to 100 in. wide. On the greatest widths, 120 to 125 in., this company bid the equivalent of 2.26c., Pittsburgh. Delivery of the entire tonnage is to be made "probably within 30 days." The Carnegie Steel Co. bid a flat price for all tonnage equivalent to 2.11c., Pittsburgh; Cambria Steel Co., a flat price equivalent to 2.12c., Pittsburgh; the Jones & Laughlin Steel Co., bid equivalent to 2.11c., Pittsburgh, up to 100 in., and equivalent to 2.16c., Pittsburgh on 100 to 110 in. The Lukens Steel Co. bid equivalent to 2.06c., Pittsburgh, up to 100 in. and 2.32c. on 120 to 125 in.

The Bureau is to open bids on Aug. 5 for approximately 6500 tons of plates, bars and shapes for various Navy yards. The lots are divided into about 2800 tons of plates, 2100 tons of bars and 1600 tons of shapes.

The Champion Engineering Co., Kenton, Ohio, has taken an order for a 10-ton crane with 40-ft. span for the galvanizing plant of the Empire Rolling Mill Co., Cleveland.

IRON AND INDUSTRIAL STOCKS

Little Selling of Steel Issues Because of Cut in Mill Quotations

Some selling of steel and allied shares the past week unquestionably was based on the new prices recently announced by the mills, coupled with the steel, ingot production figures for June and the continued drop in the monthly unfilled tonnage on the books of the United States Steel Corporation. But the great army of investors in such securities long ago recognized the fact the steel industry is passing through a period of deflation. There has been no rush of late to unload steel and allied stocks. On the contrary, the number of investors in at least some instances is on the increase, as is attested by the number of owners of United States Steel common. Money continually is working easier and freer. It is true, however, that banks are not inclined to release large funds until after crop moving requirements are more defined.

The range of prices on active iron and industrial stocks from Monday of last week to Monday of this week was as follows:

Allis-Chalm. com.	31 - 32	Lackawanna Steel.	37 - 41
Allis-Chalm. pf...	— - 72½	Midvale Steel.....	23½ - 24⅞
Am. Can com...	26 - 27⅞	Nat.-Acme	— - 15½
Am. C. & F. com.	123½ - 126⅞	Nat. E. & S. com.	44½ - 46
Am. Loco. com....	80 - 83¾	Nat. E. & S. pf...	— - 90
Am. Loco. pf.....	— - 104	N. Y. Air Brake..	58 - 59
Am. Steel F. com.	25¼ - 27¼	Pittsburgh Stl. pf.	— - 80
Bald. Loco. com.	69½ - 77⅝	Press. Steel com..	70½ - 71½
Beth. Steel com..	43 - 48⅜	Ry. Stl. Spg. com.	81⅝ - 83
Beth. Stl., Cl. B..	45 - 51½	Replogle Steel.....	18 - 19¾
Beth. Stl., 8% pf..	96½ - 99	Republic com.....	45 - 51¾
Chic. Pneu. Tool..	49⅛ - 51	Sloss, com.....	34¾ - 35
Colorado Fuel.....	26¼ - 27	Superior Steel....	29⅜ - 31½
Cruc. Steel com..	54½ - 60⅜	U. S. Pipe com...	14½ - 15
General Electric..	126 - 129	U. S. Pipe pf.....	43 - 44
Gt. No. Ore Cert..	27 - 29¼	U. S. Steel com...	73½ - 76¼
Gulf States Steel.	33 - 35	U. S. Steel pf.....	109 - 110
Int. Har. com.....	73⅛ - 82½	Vanadium Steel...	28 - 31¾
Int. Har. pf.....	— - 100	Westingh'se Elec.	42¾ - 45½

Dominion Steel Report

The annual report of the Dominion Steel Corporation, Sydney, N. S., for the year ending March 31, 1921, which will be presented to shareholders at the annual meeting on July 20 next, shows earnings of $7,212,750, after deducting all expenses incident to operations, current repairs, taxes, administrative and selling expenses, and after making provision for shrinkage in the value of inventories and investments and allowance for possible loss on accounts receivable. In the previous year the earnings were $5,532,529. During the year under review the sum of $1,583,662 was set aside for depreciation of plant and properties and sinking funds, and $970,777 for interest on outstanding bonds, leaving a balance of $4,658,312 as net profit for the year. Regular quarterly dividends upon the preference shares of the corporation and preferred stocks of the Dominion Coal Co. and Dominion Iron & Steel Co. amounted to $980,000. The balance of the year's earnings, $3,678,312, was transferred to profit and loss account. Four quarterly dividends aggregating $2,226,000 were paid on the common shares of the corporation. The balance at credit of profit and loss account on March 31, 1921, was $9,663,548, an increase of $1,452,312 over the balance at the beginning of the fiscal year.

Plans of New Companies

The Victor Piston Ring Co., American Building, Baltimore, recently incorporated with a capital of $500,000, expects to have piston rings made by contract until it can obtain a desirable site for building. The company, after looking around, finds property so high and building material so costly, that it has decided to postpone building.

The Signal Wick Co., Plainfield, N. J., recently incorporated, will continue manufacturing its railroad signal specialties as heretofore. It does not expect to build in the near future.

The Johnson Auto Body Corporation, 159 Franklin Street, Boston, recently incorporated, has taken over the Kelley & Trefry Body Co., West Roxbury, which formerly built bodies for the concern recently incorporated. The company builds passenger bodies for all standard chassis and heavy duty trucks. Its factory extension plans are incomplete, but during the summer it may need a small amount of new equipment.

The Stafford Appliance Co., La Porte, Ind., recently incorporated, has elected the following officers: Herbert A. Thomas, La Porte, Ind., president; Abel E. Stafford, Niles, Mich., vice-president; Harvey A. Gridley, Niles, Mich., treasurer, and Leonard R. Henoch, La Porte, Ind., secretary. The company was organized to manufacture and distribute improved garage tools and automobile appliances and accessories.

Trade and Office Changes

The Foster-Songer Co., Pittsburgh, has appointed Theodore L. Dodd & Co., Chicago, district sales agent for the Middle West. The line consists of seamless lap weld and charcoal iron boiler tubes; also seamless steel mechanical tubing, pipe and casing.

The Wright-Alexander Co., 201 Devonshire Street, Boston, room 302, has been made sales representative for the Millholland Machine Co., Indianapolis, line of turret lathes for all New England, Connecticut excepted.

The business and works of Buechele Iron & Tool Co., 4130 Liberty Avenue, Pittsburgh, manufacturer of structural and ornamental steel work, fire escapes, fire proof porches, wire works, etc., have been taken over and will be continued by the Builders' Steel Works Co. R. O. Belles and Fred C. Werry, formerly associated with Taylor & Dean, are respectively president and vice-president of the Builders' Steel Works Co., and Thomas H. Werry, Jr., is secretary and treasurer.

The New York Central Iron Works Co., Inc., Hagerstown, Md., has discontinued its Baltimore representation which was located in the Builders' Exchange. All inquiries from the Baltimore district are now being handled by the company's home office at Hagerstown.

W. H. J. Fitzgerald & Co., 165 High Street, Boston, have been made exclusive sales agents in New England, Connecticut excepted, for the Standard Lathe Works Co.

The Foster Machine Co., the Kempsmith Mfg. Co. and the Giddings & Lewis Machine Tool Co., for which L. S. Devos is export manager, have decided to close their New York export office at the Grand Central Palace because of the present export depression.

The Heine Safety Boiler Co., St. Louis, will change its name on July 7 to the Heine Boiler Co.

Topping Brothers, heavy and marine hardware and railroad and contractors' supplies, New York, have appointed as representatives in the New England states the Spencer Reed Co., 1265 Boylston Street, Boston. Frank S. Spencer represented Joseph T. Ryerson in that territory for a number of years.

C. Markhart, formerly of the engineering firm of Brown, Eagerman & Markhart, and H. R. Thayer, recently of the Carnegie Institute of Technology, have formed the Markhart-Thayer Engineering Co., with offices at 1319 Fulton Building, Pittsburgh. The company will specialize in estimates, designs, etc., for foundations, bridges and buildings.

The American Steel & Wire Co. announces that it has taken over as of June 30, the business and good will of the J. C. Pearson Co., Inc., Boston, which company it has owned and operated since its organization in 1913, and will now carry on the business direct. The Pearson company manufactures coated nails.

The Pennsylvania Forge Co. has opened an office in New York at 50 Church Street to facilitate handling its business in the metropolitan district. George H. Raush, Jr., has been appointed district representative, in charge of this office. He was with the Midvale Steel & Ordnance Co. for a number of years both in the manufacturing departments and in the New York and other branch sales offices.

The New York office of the Morrison & Risman Co., jobber in new and relaying rails and track accessories, has been moved to 26 Cortlandt Street, telephone Cortlandt 4405. The company's general offices and works are at Buffalo, and district sales offices are also maintained in the Drexel Building, Philadelphia, and Park Building, Pittsburgh.

The Walworth Mfg. Co., whose general offices have been at the Boston factory, First and O streets, Boston, have moved them to Pearl and High streets, Boston. This building embraces an entire block on High Street. The general offices comprise two floors where are located the president, vice-president in charge of operating, vice-president in charge of engineering, vice-president in charge of sales, treasurer, together with the entire general accounting force, branch house department, purchasing department and the sales promotion department.

The Wheeling Steel Products Co. has moved its Cincinnati district offices from the St. Paul Building to 709-10 Union Trust Building. A. F. Scherer is sales manager in charge of the district, which includes southern Ohio, Indiana, Kentucky and Tennessee. F. H. Alger, P. T. Barrett and E. F. Greisheimer have recently been added to the sales force of the Cincinnati district.

The Pittsburgh office of the American Manganese Mfg. Co., has removed from room 940, Oliver Building, to room 647 of the same building. L. S. Kerchner is resident manager.

Prices Finished Iron and Steel, f.o.b. Pittsburgh

Freight Rates

Freight rates from Pittsburgh on finished iron and steel products, in carload lots, to points named, per 100 lb., are as follows:

Philadelphia	$0.35	St. Paul	$0.665
Baltimore	0.335	Omaha	0.815
New York	0.38	Omaha (pipe)	0.77
Boston	0.415	Denver	1.35
Buffalo	0.295	Denver (wire products)	1.415
Cleveland	0.24	Pacific Coast	1.665
Cincinnati	0.325	Pacific Coast, ship plates	1.335
Indianapolis	0.345	Birmingham	0.765
Chicago	0.38	Jacksonville, all rail	0.555
St. Louis	0.475	Jacksonville, rail and water	0.46
Kansas City	0.815	New Orleans	0.515
Kansas City (pipe)	0.77		

The minimum carload to most of the foregoing points is 36,000 lb. To Denver the minimum loading is 40,000 lb., while to the Pacific Coast on all iron and steel products, except structural material, the minimum is 80,000 lb. On the latter item the rate applies to a minimum of 50,000 lb., and there is an extra charge of 9c. per 100 lb. on carloads of a minimum of 40,000 lb. On shipments of wrought iron and steel pipe to Kansas City, St. Paul, Omaha and Denver, the minimum carload is 46,000 lb. On iron and steel items not noted above the rates vary somewhat and are given in detail in the regular railroad tariffs.

Rates from Atlantic Coast ports (i.e., New York, Philadelphia and Baltimore) to Pacific Coast ports of call on most steamship lines, via the Panama Canal, are as follows: Pig iron, 55c.; ship plates, 75c.; ingot and muck bars, structural steel, common wire products, including cut or wire nails, spikes and wire hoops, 75c.; sheets and tin plates, 60c. to 75c.; rods, wire rope, cable and strands, $1; wire fencing, netting and stretcher, 75c.; pipe, not over 8 in. in diameter, 75c.; over 8 in. in diameter, 2½c. per in. or fraction thereof additional. All prices per 100 lb. in carload lots, minimum 40,000 lb.

Structural Material

I-beams, 3 to 15 in.; channels, 3 to 15 in.; angles, 3 to 6 in., on one or both legs, ¼ in. thick and over, and zees, structural sizes, 2c.

Wire Products

Wire nails, $2.75 base per keg; galvanized, 1 in. and longer, including large-head barbed roofing nails, taking an advance over this price of $1.25 and shorter than 1 in., $1.75; bright Bessemer and basic wire, $2.50 per 100 lb.; annealed fence wire, Nos. 6 to 9, $2.50; galvanized wire, $3; galvanized barbed wire, $3.40; galvanized fence staples, $3.40; painted barbed wire, $2.90; polished fence staples, $3.15; cement-coated nails, per count keg, $2.35; these prices being subject to the usual advances for the smaller trade, all f.o.b. Pittsburgh, freight added to point of delivery, terms 60 days, net, less 2 per cent off for cash in 10 days. Discounts on woven-wire fencing are 68 to 70½ per cent off list for carload lots, 67 to 69½ per cent for 1000-rod lots, and 66 to 68½ per cent for small lots, f.o.b. Pittsburgh.

Bolts, Nuts and Rivets

Large structural and ship rivets.....$2 65 to $2.75
Large boiler rivets.....$2.75 to $2.85
Small rivets .....65, 10 and 10 per cent off list
Small machine bolts, rolled threads.70 and 7½ per cent off list
Small sizes in cut threads.....65 and 10 per cent off list
Longer and larger sizes of machine bolts, 65 and 10 per cent off list
Carriage bolts, ⅜ in. x 6 in.:
Smaller and shorter, rolled threads.65 and 10 per cent off list
Cut threads .....60 and 10 per cent off list
Longer and larger sizes.....60 and 10 per cent off list
Lag bolts .....70 per cent off list
Plow bolts, Nos. 1, 2 and 3 head.....60 and 5 per cent off list
Other style heads.....20 per cent extra
Machine bolts, c.p.c. and t. nuts, ⅜-in. x 4-in.:
Smaller and shorter.....60 and 5 per cent off list
Longer and larger sizes.....60 per cent off list
Hot pressed sq. or hex. blank nuts.....$4.60 off list
Hot pressed nuts, tapped.....$4.25 off list
C.p.c. and t. sq. or hex. nuts, blank.....$4.60 off list
C.p.c. and t. sq. or hex. nuts, tapped.....$4.25 off list
Semi-finished hex. nuts:
¼ to 9/16 in. inclusive U. S. S..80, 10 and 10 per cent off list
Same sizes S. A. E.....80, 10, 10 and 10 per cent off list
⅝ to 1 in. inclusive U. S. S. and S. A. E., 70, 10, 10 and 10 per cent off list
Stove bolts in packages.....80 and 10 per cent off list
Stove bolts in bulk.....80, 10 and 2½ per cent off list
Tire bolts .....65, 10 and 10 per cent off list
Track bolts .....4c. to 4.20c. base

Square and Hex. Head Cap Screws

½ in. and under.....70 per cent off list
9/16 in. to ¾ in.....70 per cent off list

Set Screws

½ in. and under.....70 and 5 to 70 and 10 per cent off list
9/16 in. to ¾ in.....70 per cent off list

Rivets

Rivets, 1c. per lb. extra for less than 200 kegs. Rivets in 100-lb. kegs, 25c. extra to buyers not under contract; small and miscellaneous lots less than two tons, 25c. extra; less than 100 lb. of a size or broken kegs, 50c. extra.

All prices carry standard extras f.o.b. Pittsburgh.

Wire Rods

No. 5 common basic or Bessemer rods to domestic consumers, $43; chain rods, $43; screw stock rods, $48; rivet and bolt rods and other rods of that character, $43; high carbon rods, $51 to $58, depending on carbons.

Railroad Spikes and Track Bolts

Railroad spikes, 9/16-in. and larger, $3 base per 100 lb. in lots of 200 kegs of 200 lb. each or more; spikes, ½-in., ⅝-in., and 7/16-in., $3 base; 5/16-in., $3 base. Boat and barge spikes, $3.20 base per 100 lb. in carload lots of 200 kegs or more, f.o.b. Pittsburgh. Track bolts, $4 to $4.20 base per 100 lb. Tie plates, $2.50 per 100 lb.; angle bars, $2.75 per 100 lb.

Terne Plates

Prices of terne plates are as follows: 8-lb. coating, 200 lb., $11.30 per package; 8-lb. coating, I. C., $11.60; 15-lb. coating, I. C., $14.30; 20-lb. coating, I. C., $15.55; 25-lb. coating, I. C., $16.80; 30-lb. coating, I. C., $17.80; 35-lb. coating, I. C., $18.80; 40-lb. coating, I. C., $19.80 per package, all f.o.b. Pittsburgh, freight added to point of delivery.

Iron and Steel Bars

Steel bars, 1.90c. from mill. Refined bar iron, 2.50c.

Welded Pipe

The following discounts are to jobbers for carload lots on the Pittsburgh basing card:

Butt Weld

Steel Inches	Black	Galv.	Iron Inches	Black	Galv.
⅛	50½	24	¼ to ⅜	+1½	+27½
¼ to ⅜	53½	27	½	31½	13½
½	58½	44	¾	37½	22½
¾	62½	50	1 to 1½	39½	24½
1 to 3	64½	52			

Lap Weld

2	56½	44	2	34½	20½
2½ to 6	60½	48	2½ to 6	37½	24½
7 to 12	57½	44	7 to 12	35½	22½

Butt Weld, extra strong, plain ends

⅛	46½	29	¼ to ⅜	+9½	+42½
¼ to ⅜	49½	32	½	30½	18½
½	55½	44	¾	37½	23½
¾	60½	49	1 to 1½	39½	25½
1 to 1½	62½	51			
2 to 3	63½	52			

Lap Weld, extra strong, plain ends

2	54½	43	2	35½	22½
2½ to 4	58½	47	2½ to 4	38½	26½
4½ to 6	57½	46	4½ to 6	37½	25½
7 to 8	53½	40	7 to 8	30½	18½
9 to 12	48½	35	9 to 12	25½	13½

To the large jobbing trade an additional 5 and 2½ per cent are allowed over the above discounts, which are subject to the usual variations in weight of 5 per cent.

Boiler Tubes

The following are the discounts for carload lots f.o.b. Pittsburgh:

Lap Welded Steel		*Charcoal Iron*	
1¾ in.	21½	1½ in.	+10
2 to 2¼ in.	36	1¾ in.	List
2½ to 3 in.	47	2 to 2¼ in.	—10
3¼ to 13 in.	52	2½ to 2¾ in.	—15
		3 to 3¼ in.	—16
		3½ to 4½ in.	—20

Carload Discounts on Standard Commercial Seamless—

Cold Drawn			
1 in.	56	2 to 2½ in.	17½
1¼ in.	49	2¾ and 4 in.	20
1½ in.	48	4½ to 5 in.	7½
1¾ in.	25		

Hot Rolled

3 to 4 in. 30

These prices do not apply to special specifications for locomotive tubes nor to special specifications for tubes for the Navy Department which will be subject to special negotiations.

Sheets

Prices for mill shipments on sheets of standard gage in carloads, f.o.b. Pittsburgh, follow:

Blue Annealed

Cents per Lb.		Cents per Lb.	
No. 8 and heavier	2.55	Nos. 11 and 12	2.75
Nos. 9 and 10 (base)	2.65	Nos. 13 and 14	2.85
		Nos. 15 and 16	2.95

Box Annealed, One Pass Cold Rolled

Cents per Lb.		Cents per Lb.	
Nos. 17 to 21	3.30	No. 28 (base)	3.50
Nos. 22 to 24	3.35	No. 29	3.60
Nos. 25 and 26	3.40	No. 30	3.70
No. 27	3.45		

Galvanized

Cents per Lb.		Cents per Lb.	
Nos. 10 and 11	3.50	Nos. 25 and 26	4.20
Nos. 12 to 14	3.60	No. 27	4.35
Nos. 15 and 16	3.75	No. 28 (base)	4.50
Nos. 17 to 21	3.90	No. 29	4.75
Nos. 22 to 24	4.05	No. 30	5.00

Tin-Mill Black Plate

Cents per Lb.		Cents per Lb.	
Nos. 15 and 16	3.30	No. 28 (base)	3.50
Nos. 17 to 21	3.35	No. 29	3.55
Nos. 22 to 24	3.40	No. 30	3.55
Nos. 25 to 27	3.45	Nos. 30½ and 31	3.60

Non-Ferrous Metals

The Week's Prices

Cents Per Pound for Early Delivery

July	Copper, New York: Lake	Copper, New York: Electrolytic	Tin: New York	Lead: New York	Lead: St. Louis	Zinc: New York	Zinc: St. Louis
6	12.75	12.62½	29.00	4.40	4.35	4.85	4.35
7	12.75	12.62½	28.75	4.40	4.35	4.85	4.35
8	12.75	12.62½	28.87½	4.40	4.35	4.85	4.35
9	12.75	12.62½	....	4.40	4.35	4.85	4.35
11	12.75	12.62½	29.12½	4.40	4.35	4.85	4.35
12	12.75	12.62½	28.50	4.40	4.35	4.80	4.30

New York

NEW YORK, July 12.

The markets continue very quiet. Copper is steady in price, but inactive, the undertone being slightly firmer. Tin prices have fluctuated a little during the week; there are few sales. Lead is firm, with little business. Spelter turned slightly softer in price to-day.

Copper.—There has been a slight lull in export buying and the domestic market continues quiet. Nevertheless, prices are quite firmly held, and the number of producers from whom prices lower than 13c. can be obtained is narrowing. Electrolytic is quoted by the leading producers at 13c., but some of the smaller producers continue to name 12.62½c. Lake copper is quoted at 12.75c. to 13c., delivered, but those naming the higher price are getting practically no business. While German business has been an important factor in the market for some months, British orders have fallen off, due probably to the drop in exchange recently. Preliminary estimates indicate that the total copper production in the United States for the first half of 1921 was approximately 408,000,000 lb. Imports during the same period were about 185,600,000 lb., indicating a refined production of 613,600,000 lb. Deliveries for domestic consumption are estimated at 360,000,000 lb. and export shipments 266,500,000 lb. This shows a wearing down of surplus stocks, as total domestic and export deliveries during the six months were 13,000,000 lb. in excess of production.

Tin.—The market has been quiet throughout the week; the only activity worthy of note was on Monday, when 300 to 400 tons was sold, mostly for shipment from June to September from the Straits Settlement. Prices on these transactions ranged from 28c. to 28.25c. per lb. A good portion of the tonnage sold is for consumers' account, the remainder of the trading being between dealers. Otherwise the market has been featureless. The fact that there is no reported improvement in the tin plate industry tends to keep the market in the narrow groove it has occupied for some time. Spot Straits tin, New York, has ranged during the week from 28.50c. to 29c. The London market was lower than a week ago, to-day's price being £166 5s. for spot Straits, with futures £168 5s.

Lead.—Lead is quiet and firm. The American Smelting & Refining Co. has the field pretty much to itself at its price of 4.40c., New York. None of the independent producers is willing to sell at this figure, but are asking 4.62½c. and will sell only small quantities even at this price. The lead industry is declared to be in good condition, though business continues very dull.

Zinc.—Though zinc was quoted during all of last week at 4.35c., St. Louis, or 4.85c., New York, the market turned slightly softer to-day, the metal being obtainable at 4.30c., St. Louis. Business continues dull, and it is not expected that there will be any sound improvement until the sheet mills experience a considerably larger demand for galvanized sheets. The brass industry, also a large user normally, continues dull and is buying very little.

Antimony.—No activity of moment is reported and the price continues unchanged at 4.75c., New York, duty paid.

Aluminum.—Virgin metal, 98 to 99 per cent pure, is still quoted by the leading producer at 28c., f.o.b. producer's plant. Foreign metal of like grade is available at 22.50c. to 23c., New York, and 98 to 99 per cent remelted metal at 20c. to 20.50c., New York.

Old Metals.—There is little change in conditions this week, business being practically impossible. Values are generally unchanged. Dealers' selling prices are nominally as follows:

	Cents Per Lb.
Copper, heavy and crucible	12 00
Copper, heavy and wire	11.00
Copper, light and bottoms	9.00
Heavy machine composition	10.50
Brass, heavy	7.00
Brass, light	5.25
No. 1 red brass or composition turnings	8.00
No. 1 yellow rod brass turnings	5.25
Lead, heavy	4.00
Zinc	3.00
Lead, tea	3.00

Chicago

July 12.—The market is exceedingly quiet and the only metal which has changed price is tin. Lead is held at 4.45c. by sellers with buyers offering less. Old metal prices remain unchanged. We quote lake copper at 13.25c. in carload lots; tin, 30.50c.; lead, 4.45c.; spelter, 4.45c.; antimony, 7.50c. On old metals we quote copper wire, 7.50c.; crucible shapes, 7.50c.; copper clips, 7.50c.; copper bottoms, 6.50c.; red brass, 6.50c.; yellow brass, 4.50c.; lead pipe, 2.50c.; zinc, 1.75c.; pewter, No. 1, 17c.; tin foil, 18c.; block tin, 21c., all being buying prices for less than carload lots.

St. Louis

ST. LOUIS, July 8.—There is still hardly any activity in the non-ferrous markets. Lead and spelter are 10c. higher, each being quoted at 4.35c. in car lots. We quote Lake copper at 13.68½c. in car lots; tin, 29.74½c. and antimony, 5.48½c. On old metals we quote: Light brass, 4c.; heavy yellow brass, 6c.; heavy red brass, heavy copper and copper wire, 9c.; light copper, 7.50c.; pewter, 17c.; tinfoil, 18c.; zinc, 2.75c.; lead, 3c.; tea lead, 2c.; aluminum, 9c.

Reduction of Rates on By-Product Coke Ordered by Commission

WASHINGTON, July 12.—Rates on by-product coke from seaboard, New Jersey, to destinations in New England, New York and New Jersey were condemned as unreasonable and unduly prejudicial in a decision handed down yesterday by the Interstate Commerce Commission and are to be superseded by a mileage scale operative on Nov. 1, which, in general, will mean a reduction of approximately 20 per cent. The new scale will begin with 90c. a ton for distances not greater than 10 miles and will proceed with 10c. increases for each additional 10 miles up to 110 miles and then by 10c. increases for the next 15 miles, followed by 10c. increases for 25 miles up to 600 miles at which rates become $3.90 per ton. These rates are subject to the general advance in rates made last August. The commission also denied through routes and joint rates from seaboard to destinations on the New York, New Haven & Hartford Railroad, by way of New York harbor and ordered discontinuance of relief from the fourth section on coke. Reparation was awarded on findings as to the character of specific rates. The general finding was that the rates applied over all rail routes to the destinations involved from Aug. 14, 1917, to January 21, 1918, inclusive, were unreasonable and unduly prejudicial to the extent they exceeded 80 per cent of the rates shown in the distance scales outlined and that except to points on the west shore in New Jersey over intrastate routes are unreasonable to the extent of their excess over the rates shown in the scale, subject to the general advance mentioned. Rates increased under that advance will apply on a minimum of 50,000 lb. in open cars and 40,000 lb. when loaded in box or stock cars, except that when cars are loaded to cubic or visible capacity actual rates will apply. The decision was the result of a complaint made by the Sea-Board By-Product Coke Co.

PERSONAL

Walter S. Tower, who has been trade adviser of the Consolidated Steel Corporation, New York, took up on Monday, July 11, work with the Department of Commerce to which he has been assigned by Secretary Hoover. While Mr. Tower's position has not been clearly defined, it is stated, contrary to press reports, that he will not be the chief of an industrial division on iron and steel, at least not in the immediate future. His first task is expected to be in connection with a request made by the United States Shipping Board to the Department of Commerce, to assist the former in the organization of work looking to the gathering and analysis of shipping statistics. Mr. Tower, who is 40 years of age, was born in West Bridgewater, Mass., where he obtained his public school education. He is a graduate of Harvard, getting the degrees of A.B. and A.M. in 1903 and 1904, respectively, and also graduated from the University of Pennsylvania with the degree of Ph.D. in 1906. For a series of years, and up to 1917, he was engaged in teaching and traveling. While traveling he studied trade conditions, chiefly in North and South America. After that, he became connected with the Shipping Board. He has written several articles concerning Latin-American trade conditions. During the war he was associated with the Division of Planning and Statistics of the Shipping Board. Upon the resignation, in March, 1919, of E. F. Gay, as director of that division, he was succeeded by Mr. Tower, who remained in that position until June, 1919, when he went with the Consolidated Steel Corporation.

John S. Oursler, general superintendent of the Homestead, Pa., works of the Carnegie Steel Co., is very seriously ill at Lakeside Hospital, Cleveland, following an operation.

A cablegram from Paris announces that Ambrose Swasey, president Warner & Swasey Co., Cleveland, and past president American Society of Mechanical Engineers, has been honored by election in two prominent French societies. He has been elected an officer of the Legion of Honor, of which organization he has been a chevalier since 1900, and has also been made an honorary member of the Society of Civil Engineers of France. Mr. Swasey is a member of a delegation of American engineers who recently went to Europe to present the John Fritz medals, awarded to Sir Robert Hadfield and to Dr. Eugene Schneider.

George H. Hannum, general manager Oakland Motor Car Co., Pontiac, Mich., and A. B. C. Hardy, general manager Olds Motor Works, Lansing, Mich., have been made vice-presidents of the General Motors Corporation. John Scott, formerly assistant factory manager of the Olds Motor Works, has been made factory manager.

Prof. Arthur M. Greene, Jr., professor of mechanical engineering Rensselaer Polytechnic Institute, will assume the duties of dean and professor in mechanical engineering of the enlarged school of engineering of Princeton University in the fall of 1922. The school will give courses in civil, chemical, electrical, mechanical and mining engineering, these courses extending over four years. A fifth year will be required for an engineering degree. Professor Greene was born in Philadelphia in 1872, was graduated from the University of Pennsylvania in 1893 with the degree of B.S., securing an M.E. degree the next year. In 1916 this university gave him the honorary degree of D.Sc. He has taught at Drexel Institute, University of Pennsylvania, University of Missouri and Rensselaer Polytechnic Institute, where he established the mechanical engineering department for which Mrs. Russell Sage donated $1,000,000. During the war Professor Greene served as a member of the advisory committee of technical societies aiding the Naval Consulting Board; he was chairman of the plant committee for Rensselaer County, New York, for the Fuel Administration and served as a member of the Engineering Council of the United Engineering Societies. He is the author of several books and has contributed to the technical press and to the proceedings of the American Society of Mechanical Engineers, of which society he has served as manager and vice-president.

William P. Palmer, president American Steel & Wire Co., Cleveland, has established summer headquarters at the company's North Works, Worcester, Mass. He will pass week ends with his family at Bluehill, Me., where he plans to erect a summer home.

Joseph Michaels, vice-president Hyman-Michaels Co., Chicago, accompanied by his family, sailed for Europe on July 4, for a four months' vacation.

L. A. Holmes, engineer, McClintic-Marshall Co., Potstown, Pa., has been transferred to the Boston office of that company.

Col. R. P. Lamont, president American Steel Foundries, Chicago, recently sailed for London to attend the meeting of the International Chamber of Commerce, as a representative of the Illinois Manufacturers' Association.

C. H. Lydell, Mertz & McLellan, consulting engineers, London, Eng., who is inspecting American public utilities, spent several days in Milwaukee the past week to visit the new Lakeside power plant of the Milwaukee Electric Railway & Light Co., at St. Francis, Milwaukee county, an important installation of steam generating equipment operated with pulverized fuel.

H. J. Freyn, president Freyn, Brassert & Co., Chicago, sailed for Europe on an extended business trip through England, Belgium, Holland, France and other countries. Mr. Freyn is expected to return in October.

Harry Quinn, vice-president Fairbanks Co. and manager of the New Orleans branch, has resigned. He had been with the Fairbanks Co. since 1907, during which time he rose from the position of special accountant to vice-president and branch house manager; holding in the interval the positions of auditor of disbursements, branch house auditor, general auditor, comptroller, assistant to president, general manager, general manager and second vice-president, vice-president and manager of the New Orleans branch. He spent a year in Europe, reorganizing the European branches of the Fairbanks interests. In 1919 Mr. Quinn took over the New Orleans house.

Isaac Harter has been appointed general superintendent of the Babcock & Wilcox Co., succeeding the late James P. Sneddon. Mr. Harter's advance has been a continuous one. On graduating in 1901 from the University of Pennsylvania he entered the employ of the Altman & Taylor Machinery Co., Mansfield, Ohio, a corporation of which his father had been president. He began at the bottom in the boiler department as a gang boss on inventories, and was transferred later to the cost department, where he became familiar with the details of each branch of the business. He was elected a director of the company while in this department, and a little later was appointed acting superintendent of the boiler department. In September, 1905, the company sold its boiler business to the Stirling Co., and Mr. Harter joined the staff of E. R. Stettinius, the business head of the latter company, which was absorbed by the Babcock & Wilcox Co. in 1907. When L. I. Summers resigned the superintendency of the Stirling works at Barberton, Ohio, Mr. Harter succeeded him, and in 1911 became superintendent of the Bayonne, N. J., works. He served in this capacity until about a year ago, when he became assistant to the president, in New York, where his office will remain as general superintendent.

I. D. Bielostozky, representing Morris & Bramer, Petrograd, Russia, has arrived in New York to secure the representation of American machine tool manufacturers in Russia. His headquarters are with the W. P. Neth Co., 44 Whitehall Street, New York. He wishes to receive catalogs and price lists. His firm intends also to extend its activities to China, Japan and Finland.

Frank F. Sims, for several years with the Pacific Coast Steel Co. as sales engineer, has opened offices for the practice of industrial engineering at 1306 L. C. Smith Building, Seattle. He will handle industrial

engineering and make investigations of proposed engineering operations.

F. E. L. Whitesell, for several years with the sales department of the Railway & Industrial Engineering Co., Greensburg, Pa., has been appointed New England representative, with headquarters at 136 Federal Street, Boston. Mr. Whitesell is a graduate of Washington and Jefferson College and during the world war served with the ambulance corps in France.

H. W. Bishop, Jr., for 10 years attached to the general sales office of LaBelle Iron Works, Steubenville, Ohio, and since the consolidation of LaBelle Iron Works, the Whitaker-Glessner Co. and the Wheeling Steel & Iron Co., identified with the Pittsburgh sales office of the Wheeling Steel Products Co., resigned, as of July 1. It is understood that he will make a connection with an Eastern steel company.

Charles V. McIntire has resigned as chief engineer of the International Coal Products Corporation to enter the field of consulting engineering, in association with A. Stephen Knowles, 66 Broadway, New York. He will specialize in by-product coke oven work, low temperature distillation of coal processes and other systems pertaining to the preparation and treatment of coals. Mr. Knowles was engaged for a number of years in the design and construction of by-product coke ovens; first, during six years service with the Koppers Co. and later, covering a period of five years, as chief engineer of the Wilputte Coke Oven Corporation, New York.

Carl Carlson has accepted a position with the Woonsocket Wagon Mfg. Co., Woonsocket, R. I., as general superintendent in its drop forge department. He was formerly assistant general superintendent at Billings & Spencer.

F. E. Myers & Bro. Are Incorporated

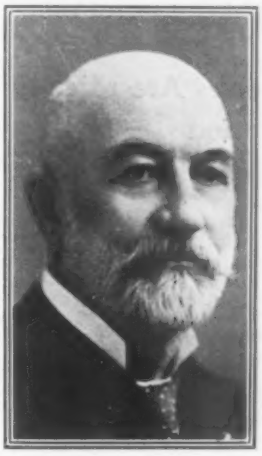
F. E. Myers & Bro., Ashland, Ohio, force and lift pumps, hay tools, etc., after operating for 45 years as a partnership, have been incorporated at $6 000,000 as the F. E. Myers & Bro. Co. F. E. and P. A. Myers started manufacture in a basement with a few hand tools, limited capital and no outside help. The industry has grown to one employing 850 men and producing two pumps a minute of working hours and a corresponding number of cylinders, hay tools, door hangers, etc. It is known as one of the largest co-partnerships under one continuous management in Ohio. The business will be conducted the same in the future as in the past. The officers of the company as as follows: F. E. Myers, president; P. A. Myers, first vice-president and general manager; John C. Myers, second vice-president; Guy C. Myers, third vice-president; F. B. Kellogg, secretary and treasurer, who together with A. N. Myers, T. W. Miller and G. D. Myers constitute the board of directors.

F E. MYERS

Francis E. Myers is the organizer, salesman and financier of the partnership, while Philip A. Myers is the inventor. Previous to the formation of the partnership, F. E. Myers was a successful salesman. Their career as manufacturers began in 1879 after P. A. Myers invented a double acting force pump. He has secured more than 70 active patents. F. E. Myers has just given up the presidency of the Cleveland & Southwestern Railroad; he is president of the First National Bank of Ashland and director of the Union Trust Co., Cleveland. Both brothers are prominent in civic and charitable affairs and have given money and land for public enterprises.

OBITUARY

HENRY S. MANNING, a one-time partner of Manning, Maxwell & Moore, Inc., machine tools, 119 West Fortieth Street, New York, died July 9 in his apartment in New York. He was 76 years old. He was studying at Yale with the class of 1862 when he left to fight for the Union, rising to the command of a colored regiment. The present corporation of Manning, Maxwell & Moore, Inc., had its origin with Mr. Manning, who, having been in business individually for several years, established the concern of H. S. Manning & Co., with headquarters at 111 Liberty Street, New York. In 1873 Eugene L. Maxwell became a partner in H. S. Manning & Co. and continued his connection with the establishment until his death in 1894. Charles A. Moore joined the firm in 1880, at which time the present corporation name was adopted. In 1905, Henry S. Manning and Charles A. Moore being the only remaining partners, Mr. Moore purchased Mr. Manning's interest and Mr. Manning invested heavily with Milliken Brothers, structural iron and steel manufacturers, New York, who failed, thereby causing a heavy financial loss to Mr. Manning. He then joined the International Banking Corporation, 61 Wall Street, and later withdrew and maintained offices at 49 Wall Street. He was a member of the American Society of Mechanical Engineers and the Union League Club.



HENRY S. MANNING

Prof. FRANCIS BACON CROCKER, founder and vice-president Crocker-Wheeler Co., Ampere, N. J., and one of the foremost electrical engineers in the United States, died July 9 at his home in New York at the age of 60. He was born in New York and was graduated from the Columbia School of Mines in 1882, later receiving the Ph.D. degree. He founded the School of Electrical Engineering at Columbia University, serving as the head for 20 years. Together with Charles G. Curtis and Dr. Schuyler S. Wheeler he created the commercial motor, first put to use in 1886. In 1917, with Peter Cooper Hewitt, he developed a helicopter which was able to fly. He was a former president of the American Institute of Electrical Engineers, the Electric Power Club, the New York Electrical Society and a past sceretary of the International Electrical Congress. He was active in the standardization of electrical equipment throughout the world and was one of two American delegates to the International Electrotechnical Commission in London. He was the author of several books in the electrical field.

JAMES HARRISON STEEDMAN, vice-president Curtis & Co. Mfg. Co., St. Louis, died on July 1 at Santa Barbara, Cal., where he had gone for his health in January. His illness began with a breakdown during the war from overwork, when he was a lieutenant-commander in the navy, supervising the conditioning of engines in the ships of the Atlantic fleet. Prior to the war, he was an officer in the Naval Reserve Corps. Mr. Steedman was born in St. Louis 54 years ago, and was graduated from the St. Louis Manual Training School and Washington University. He was president of the St. Louis Steel Foundry Co. from 1889 to 1891, since which time he has been connected with the Curtis concern, of which his brother, Edwin H. Steedman, is president.

GEORGE P. POPE, a prominent member of the sales department, Minneapolis Steel & Machinery Co., Minneapolis, and well known in the fabricating trade, died July 7.

Machinery Markets and News of the Works

TOOL PLANTS CLOSED

Most of the Larger Factories Are Idle for Indefinite Period

No Improvement in Buying of Machine Tools —Stocks on Hand Will Meet Demand for Months

Many of the larger machine-tool manufacturing plants are closed and will remain so indefinitely. Nearly all of these companies have made up sufficient stock to last for at least six months, and unless there should be a larger demand for tools during the last half of the year than is expected, the plants will remain closed until the first of the year. Some companies have experimental work under way and this will be continued until new tools recently designed have been perfected for the market.

At Chicago, where some railroad buying has been in prospect, no action has been taken. The Illinois Central and Rock Island inquiries are still pending, and a few additional machines have been inquired for.

The Automatic Electric Co., the Acme X-Ray Co., both of Chicago, and the Aerial Cutlery Mfg. Co., Marinette, Wis., have inquired for lists of tools in the Chicago market.

Federal vocational schools, which are being started throughout the country, offer possibilities of business. The McKinley School, Canton, Ohio, has inquired for about 25 machines.

A carpet company in New England was a purchaser of tools last week. A Revere, Mass., manufacturer also bought a few machines.

An inquiry has been issued by a Detroit company for 40 to 50 automatic screw machines, but the placing of the business is contingent on the closing of a pending order for automobile parts.

In general the machine-tool business throughout the country continues very dull, but inquiries in some sections are better.

New York

NEW YORK, July 12.

No signs of improvement in machine-tool inquiry and buying are apparent. The situation the past week has been the same as in preceding weeks, with the dullness intensified by the recent holidays. The only inquiry of note before the trade is that of the Bethlehem Steel Co., reported last week.

While the number of cranes sales reported the past week is small, the market generally is showing more activity. A fair number of inquiries is on hand, one for a total of 22 electric cranes, ranging from 7½-tons to 15-tons capacity being in the hands of at least one crane builder. This business, however, probably will not be placed for at least six months. The 12-ton hand power crane for the Government of Porto Rico, on which bids were submitted through New York exporters, will be awarded shortly. There is an inquiry in the market from Ray Houck, Reading, Pa., for a 5-ton, 40-ft. span overhead traveling crane for a client.

Among recent sales were: Shepard Electric Crane & Hoist Co., an electric hoist equipped with a 2-yd. bucket to the Broken Hill Proprietary Co. in Australia; Maris Brothers, a 10-ton electric crane to the Viscose Co. for its new plant at Lewiston, Pa., and a 5-ton crane for export to Cuba; Chisholm-Moore Mfg. Co., three 3-ton and one 4-ton hand power cranes to Marc Eidlitz & Son, 41 East Forty-second Street, New York, for the new building of the American Telephone & Telegraph Co., New York.

I. D. Bielostozky, representing the machinery firm of Morris & Bramer, Petrograd, Russia, is in the United States with a view to arranging to represent American manufacturers of machine tools at Vladivostok. Morriis & Bramer also intend to extend their selling activities to China, Japan and Finland. Mr. Beilostozky desires catalogs and price lists, his address being in care of the W. P. Neth Co., 44 Whitehall Street, New York.

The Crane Co., 490 Cherry Street, New York, manufacturer of valves, steam specialties, etc., with headquarters at Chicago, has awarded a contract to the Gabler Construction Co., 402 Hudson Street, for its new building, adjoining the present works, 100 x 145 ft., to cost about $28,000.

The Standard Change-Making Corporation, New York, has been incorporated with a capital of $250,000 by S. Bernstein, K. Sperberg and M. Sindel, 621 Broadway, to manufacture special machinery and parts.

The Butler Kwik Lift Co., Brooklyn, has been incorporated with a capital of $50,000 by E. M. and Z. M. Butler and H. E. Haupt, to manufacture lift devices and elevating equipment for automobiles, and other garage apparatus. It is represented by W. B. O'Connor, 375 Fulton Street, Brooklyn.

The W. F. Mangels Co., 2863 West Eighth Street, Brooklyn, manufacturer of mechanical amusement equipment of heavy type, as carousels, etc., is planning for the erection of a one-story addition, 90 x 200 ft.

Ashley Garages, Inc., New York, has been incorporated with a capital of $150,000 by J. R. Ashley, 351 West Eighty-sixth Street, to manufacture portable metal garages and attachments.

Simon Gasner & Son, Inc., 1876 Pitkin Avenue, Brooklyn, has completed plans for a three-story automobile service and repair building, 100 x 100 ft., at Glenmore Avenue and Powell Street, estimated to cost about $125,000.

The Rogel Lighting Fixture Mfg. Co., New York, has been incorporated under State laws to manufacture electric and gas fixtures. The incorporators are C. G. Robin and L. and I. Gelfland. It is represented by I. T. Fiatto, 261 Broadway.

The American Gage Corporation, Brooklyn, has been incorporated under Delaware laws with capital of $2,500,000 to manufacture gages and other equipment for automotive service. The incorporators are M. E. Nolan, E. C. Ballantyne and S. C. Berry, Brooklyn. The company is represented by the Capital Trust Co., Dover, Del.

The Die-Casting Specialty Corporation, Brooklyn, has been incorporated under State laws to manufacture diecastings and similar products. The incorporators are F. M. Cohen, C. Gould and A. Janssen. The company is represented by M. B. Sennett, 32 Court Street, Brooklyn.

S. B. Wight, agent for the New York Central Railroad Co., Grand Central Terminal, New York; Cleveland, Cincinnati, Chicago & St. Louis Railway Co., Michigan Central Railroad, and other affiliated lines, will receive bids up to 12 o'clock noon, July 22, for general repairs of 50 locomotives similar to class H-5 Mikado freight locomotives. Each bid must be accompanied by a $50,000 bond.

L. B. Redner, 200 West Seventy-first Street, New York, is taking bids for a new two and three-story automobile service and repair building, 25 x 100 ft., at 327-33 West Sixty-ninth Street, estimated to cost about $125,000.

The Pathe Freres Phonograph Co., 18 East Forty-second Street, New York, manufacturer of talking machines and parts, is being reorganized with W. W. Chase, president and general manager White Sewing Machine Co., Cleveland, as head of the company.

The Trumpbour-Whitehead Brass & Copper Co., 309

Canal Street, New York, has leased property at 265-67 Canal Street, for a new local establishment.

The 29 Jackson Street Garage Corporation, New York, has acquired the three and four-story buildings at Monroe and Jackson streets, extending to 372-76 Madison Street, totaling 75 x 100 ft., for an automobile service and repair works.

The MacCracken Garage Equipment Co., 373 West 125th Street, New York, has leased property at 433-47 East 124th Street for a long term of years, and will build a new one-story works building to occupy the entire plot, 100 x 188 ft.

Freight handling and conveying equipment will be installed on the new piers to be erected by the city of New York, Dock Commissioner Murray Hulbert in charge. The first structure, 1000 ft. long, will be built at the foot of Canal Street, North River, and plans and specifications will be completed about Aug. 1. Five other piers of the same size, approximately, will be constructed in this vicinity.

The Master Bake Pot Corporation, Bayonne, N. J., has been incorporated with a capital of $100,000 by M. M. Hogan, A. D. Harz and Percival H. Cruden, 14 North Street, to manufacture metal cooking utensils.

Gundiliere Brothers, 45 Hickory Street, Orange, N. J., are taking bids for a new one-story foundry, 32 x 60 ft., for iron casting production, at the rear of address noted. Albert P. Nucciarone, 206 Central Avenue, is architect.

The Safety Gas Apparatus Co., Inc., Hoboken, N. J., has been incorporated with a capital of $100,000 by William Wirt, William J. Connolly and Paul Devarco, 355 Fourteenth Street, to manufacture gas-burning equipment.

Fire, July 8, destroyed the automobile body manufacturing plant of Max Leowitz, Roosevelt, N. J., with loss estimated at about $20,000, including equipment.

The National Radio Electric Sign Co., Jersey City, N. J., has been incorporated with a capital of $25,000 to manufacture electrically operated signs. It is represented by Cornelius A. Cole, Hackensack, N. J.

The Metal Materials Co., Asbury Park, N. J., has been incorporated with a capital of $125,000 by Roscoe G. Tagle, Frank V. B. Young and Isaiah Matlack, 601 Mattison Avenue, to manufacture metalware products.

The E-Z Product Mfg. Co., 180 Amherst Street, East Orange, N. J., has filed notice of organization to manufacture filters and other mechanical specialties. Charles E. Wiltsey, 152 Halsted Street, heads the company.

The Henry R. Worthington Co., Harrison Avenue, Harrison, N. J., has made an offer of $8,459.27 to the Town Council for the purchase of 14 lots on Wilhelm and Sussex streets, for proposed plant extensions. The company manufactures pumps and pumping machinery.

The Williams Specialty Co., 9 Walnut Place, Montclair, N. J., has filed notice of organization to manufacture razor plate and kindred products. James Williams heads the company.

The Hudson Auto Body Co., Union Hill, N. J., has been incorporated with a capital of $100,000 by Joseph Solomon, Morris Bernstein and Carl Weitz, 8 Bergenline Avenue, to manufacture automobile bodies and equipment.

Oven equipment and other mechanical apparatus will be installed in the addition to be constructed by the Ward Baking Co., Ampere, East Orange, N. J., to cost about $450,000. A permit for the work has just been issued, and includes a one-story service department for automobile trucks.

The Zolleis Mfg. Co., East Orange, N. J., has been incorporated with a capital of $100,000 to manufacture valves and kindred mechanical equipment. Harry H. Picking, 525 Main Street, represents the company.

Louis J. Holzmann, 393 South Twenty-first Street, Irvington, N. J., manufacturer of chutes and other iron products, has secured permission for the erection of a new plant at 107-109 Montgomery Avenue.

The Electric Heating Apparatus Co., Newark, N. J., manufacturer of electrical equipment, has removed its plant from 123-25 Sussex Avenue to 18-34 Nesbitt Street, where increased facilities will be provided.

The New Jersey Chemical & Rubber Works, Inc., Newark, has been incorporated with a capital of $100,000 by Nathaniel Ginsburg, Meyer E. Gusman and Jacob Janoff, to manufacture rubber products. It is represented, by A. Milton Jacobs, 9 Clinton Street.

The Miniature Bulb Co., Warren Street, Newark, has filed notice of organization to manufacture incandescent electric lamps. Angelo Paione, 695 Ridge Street, heads the company.

Alexander, Morrison & Co., Inc., Newark, has been incorporated with a capital of $500,000 by L. M. Scheer, E. T. Adams and Maurice A. Potter, 111 Gotthart Street, to manufacture boilers and kindred equipment.

The Flexible Products Co., 65 Clinton Place, Newark, has filed notice of organization to manufacture flexible tubing, etc. Herbert Bingham heads the company.

Fire, July 2, destroyed a portion of the factory of the L. S. Wright Machine Works, 9 Alling Street, Newark, with loss estimated at about $10,000. The company has been planning for removal to a new location at High and Boyden streets, and, it is said, will re-establish the works at this location.

The Board of Freeholders, Newark, will break ground at once for a new industrial building at the Overbrook Hospital, near Caldwell, to be equipped for vocational work. It is estimated to cost about $125,000. Chairman of the Building Committee, Mr. Ball, is in charge.

The Superior Auto Parts Co., 221 Plane Street, Newark, has filed notice of organization to manufacture automobile parts and other mechanical equipment. George Murphy and Carl Bettinger head the company.

New England

BOSTON, July 11.

The bulk of the machine tools moved the past week was sold by one concern. The purchase of tools by the Bigelow-Hartford Carpet Co., to replace equipment at its Clinton, Mass., plant, which was split up among three machinery houses, is the outstanding feature of the market. Among the tools taken were three Flather lathes, 24 x 26 in., 18 x 21 in., and 14 x 6 in.; a 16-in. shaper, 3-ft. radial drill, 36-in. x 16-ft. Liberty open side planer, and a Milwaukee milling machine, as well as some wood-working equipment. The company did not cover on grinders, drills, and other small tools on which it inquired. The Eastern Machine Co., Revere, Mass., bought one ¾-in. turret lathe, one 6-spindle and one 2-spindle drilling machine, while a Lancaster, N. H., interest took an Ohio milling machine. Other purchases for the week include a No. 25 Ohio milling machine by the Dennison Mfg. Co., Framingham, Mass., paper products; a used 6-spindle drilling machine by a Providence manufacturer; 6-spindle drilling machine and a No. 2 Southworth screw machine by the Rhode Island Machine & Tool Co., Woonsocket, R. I.; one 4-spindle drilling machine by a Cambridge, Mass., firm, and one 4-ft. Dreses plain radial drill by a local concern.

The Maine Central Railroad Co. has not covered on the lathe, shaper and drill on which it inquired recently and appears in no hurry to do so. The General Electric Co., West Lynn, Mass., which some time ago issued a list, bought only a few lathes against it. The other equipment needed was taken from other plants belonging to the company. School business is coming in slower than anticipated. The Worcester Consolidated Gas Co., Worcester, is in the market for a 12-in. grinder, a pipe machine and other equipment. Otherwise, inquiries are scarce. The demand for machine tools in Connecticut is unusually quiet. It is estimated approximately 67 per cent of the iron and steel-working industries of that State are closed for inventories, repair or other reasons, for periods ranging from 10 days to three weeks. Not in the history of the trade has the demand for machinery, tools, hardware and other iron and steel products been as light as it is to-day. Massachusetts appears relatively better off industrially than other New England States, but gaps are beginning to open and it is conceded by many that conditions will be quieter before the close of July. Leading machinery making interests of Boston, who some months ago contemplated purchasing machine tools but withdrew from the market because prices at that time were considered out of line with other commodities, this week again sounded the market only to immediately withdraw tentative inquiries on prices named by dealers.

The Wood Worsted Mills, a subsidiary of the American Woolen Co., asked prices on a 50-ton crane, but has decided not to purchase at this time. The Amoskeag Mfg. Co. is still negotiating on its 60-ton crane with a view to securing lower quotations. The difference between original and present bids made by crane interests in some instances is $6,000 to $7,500.

Stone & Webster, Boston, acting for the Ford Motor Co., has purchased four 2000-hp. hydraulic turbines for the proposed Green Island, N. Y., hydro-electric plant from the Allis-Chalmers Mfg. Co.

The Norton Co., Worcester, Mass., and the American Emery Wheel Works, Providence, R. I., have announced a reduction approximating 10 per cent in grinding wheels.

The adoption by manufacturers of machine screws of the National Standard Thread Schedule is a widely discussed topic in New England machine shops. Under the new schedule the old sizes, 14-20, 20-18 and 24-16 are eliminated and ¼-in.-20, 5/16-in.-18 and ⅜-in.-16 substituted. The discontinued sizes are considered specials except when

ordered in quantity lots. The new schedule also provides fine threads which sell at the same price as the standard.

The William E. Quinn Co., Northampton, capitalized for $50,000, has been granted a Massachusetts charter to manufacture saws, tools, machinery and supplies. Harry M. Chamberlain, Bardwells Ferry, is president, and Albert G. Beckman, Northampton, treasurer.

Harry L. Donahue, 1460 Tremont Street, is president and treasurer of the Daniels Mfg. Co., Boston, with a capital of $600,000, recently incorporated under Massachusetts laws to manufacture fastening devices. Charles T. Mackay, 95 H Street, South Boston, and Edwin J. Giblin, 17 Mt. Vernon Street, Dorchester, Boston, are interested in the company.

The General Electric Co., West Lynn, Mass., will erect additions to buildings Nos. 34, 36 and 51.

The H & H Foundry & Machine Co., Stamford, Conn., last week was damaged by fire to the extent of $25,000.

The city of Worcester, Mass., is in the market for two electrically driven pumps of 60 gal. per min. capacity each.

Plans are being drawn for a one-story, 170 x 300 ft. plant for the Meisel Press Mfg. Co., 944 Dorchester Avenue, Dorchester, Boston..

A Massachusetts charter has been given the Hygienic Coin Lock Co., Boston, capitalized for $100,000. Isaac J. Segel, 30 Warren Avenue, Malden, is president and treasurer.

The Shambow Shuttle Co., Woonsocket, R. I., manufacturer of shuttles and other textile mill equipment, is having plans prepared for a new three-story factory, 84 x 158 ft., on North Main Street, to cost about $100,000 with equipment. Lockwood, Greene & Co., Boston, are architects and engineers.

The Economy Electrical Mfg. Co., New Haven, Conn., has been incorporated with a capital of $25,000 by A. I. Lapides, S. D. Pardoll and S. Jacobson, 1 Lawrence Street, to manufacture electrical equipment.

Mercer Brothers, 280 Main Street, Nashua, N. H., have had plans prepared for a new two-story automobile service and repair works, 100 x 100 ft., to cost about $100,00 with equipment. Hutchins & French, 8 Winter Street, Boston, are architects.

The United States Screw & Stamping Co., Worcester, Mass., has been incorporated with a capital of $25,000 to manufacture screw products, metal stampings, etc. Robert C. S. Whittemore is president, and Henry Beland, 26 Baker Street, treasurer.

The Columbia Enamel Mfg. Co., Hartford, Conn., has filed notice of dissolution under State laws.

The David Brown Co., Foster Street, Lawrence, Mass., manufacturer of bobbins and other textile mill equipment, has awarded a contract to the E. W. Pitman Co., Bay State Building, for a two-story and basement addition, 40 x 104 ft., to cost about $40,000.

The Electrical Specialty Mfg. Co., 51 Beaufort Street, Providence, R. I., has filed notice of organization to manufacture electrical equipment. W. B. and L. J. Hopkins head the company.

The Arrow Tool & Mfg. Co., 200 Cannon Street, Bridgeport, Conn., formerly known as the Arrow Tool Co., will devote a large portion of operations to the manufacture of a new electric expansion plug, and which will be placed on the market at an early date. Other departments of the works will manufacture tools, dies and special machinery. H. S. Forsberg is president.

The Essandell Tire Co., Boston, has been incorporated with a capital of $250,000 to manufacture automobile tires. Franklin G. Saylor is president, and George A. Lufkin, 173 Shirley Avenue, Revere, Mass., treasurer.

Otto Fichtenmayer & Brother, New Bedford, Mass., operating a forge works at 326 South Water Street, have awarded contract to Samuel Gray & Son, Pine Street, for a two-story shop, 44 x 60 ft., for automobile repair work.

Buffalo

BUFFALO, July 11.

New construction at the works of the Buffalo Forge Co., 490 Broadway, Buffalo, plans for which were recently filed, will consist of remodeling the mechanical fan shop, increasing the department to a total of 64,235 sq. ft. of floor area, including about 23,800 sq. ft. of galleries for assembling operations.

The Ideal Electric Dumbwaiter Co., Buffalo, has been incorporated with a capital of $50,000 by G. A. Irvin, J. D. Hillery and J. A. Wechter to manufacture electrically-operated dumbwaiters and other lift equipment. It is represented by Sullivan, Bagley & Wechter, Chamber of Commerce Building.

Fire, July 7, destroyed a portion of the plant of Corning Brick, Terra Cotta & Tile Co., Corning, N. Y., with loss estimated at about $40,000, including equipment.

The new plant to be erected by the Mayer Coating Machines Co., 205 St. Paul Street, Rochester, N. Y., on Scottsville Road, will be one-story, 125 x 320 ft. G. Morton Wolfe, 1377 Main Street, Buffalo, is architect. G. W. Mayer is head.

The Atmospheric Nitrogen Co., Syracuse, N. Y., affiliated with the Solvay Process and Semet-Solvay companies, is planning to place the first unit of its new plant in service early in August, with construction work up to the present time representing an investment of about $3,000,000. Tentative plans provide for the erection of a second unit at an early date.

The Abott Electric & Supply Co. has incorporated for $10,000 to manufacture electrical appliances and do electrical contracting. William F. Burket, 61 Eaglewood Avenue, Buffalo, is the principal stockholder.

The Houde Engineering Corporation, 1392 West Avenue, Buffalo, will erect a factory to cost $50,000 for the manufacture of shock absorbers.

Philadelphia

PHILADELPHIA, July 11.

Frank P. Florentine, Park Avenue, Philadelphia, has awarded a contract to the Stewart Brothers Co., 2526 North Orkney Street, for a one-story machine shop on Park Avenue, for automobile parts manufacture and repair work.

The Electro Sherardizing Co., Philadelphia, has been incorporated with a capital of $25,000 to manufacture metal specialties. J. E. Gibson, Wood-Norton Apartments, is treasurer.

Davis Brothers, Inc., Philadelphia, is being organized by E. P. and Edward L. Davis to manufacture railroad spikes, bolts, nuts, etc. Application for a State charter will be made on July 25. Bayard Henry, Land Title Building, represents the company.

The Safety Oiling System, Inc., Philadelphia, has been incorporated with a capital of $100,000 to manufacture mechanical oiling devices and oiling systems. Arthur Baruch, 2064 North Sixty-second Street, is treasurer.

A one-story power plant will be constructed by the Logan Baking Co., Philadelphia, in connection with the erection of its new three-story and basement plant, 50 x 125 ft. T. Frank Miller, 1012 Walnut Street, is architect in charge of the work.

The McFarlan-Philadelphia Co., Philadelphia, is being organized to manufacture automobile and aeroplane parts and equipment. Application for a State charter will be made on Aug. 1. The company is represented by Illoway & Felix, Bulletin Building.

The F. J. Stokes Machine Co., Seventeenth and Cambria streets, Philadelphia, has disposed of its two-story plant, 45 x 195 ft., to W. H. Stehle, for $42,500. No announcement has been made by the new owner regarding character of operations in the future.

The McFarland-Meade Co., Seventieth Street and Kingsessing Avenue, Philadelphia, manufacturer of windows, etc., has filed plans for a new one-story metal shop, 100 x 125 ft.

Property of the Winfield S. Barnes Co., Twentieth and Erie streets, Philadelphia, manufacturer of automobile equipment, steel products, etc., will be sold at once by the receivers, Winfield S. Barnes and Otto R. Heiligman, the disposition to include the plant and entire machinery installation.

The Tri-Plex Safety Razor Co., Inc., Philadelphia, has been incorporated with a capital of $200,000, to manufacture safety razors, knives, etc. The incorporators are Herman and Melvin Perlish and Edward Somerson, care of the U. S. Corporation Co., Commonwealth Building.

A total of 60,245 lb. of mild steel angles, 1½ x 1½ x ¼ in., and 1069 bars, 24 ft. lengths, will be offered at public sale at 10 a. m., July 18, at the warehouse of the Harold McCalla Co., Beech Street and Columbia Avenue, Philadelphia.

Morris Jones, Inc., Philadelphia, is being organized by Morris Jones and associates to manufacture automobile engines, tractor equipment, etc. Application for a State charter will be made on July 20. The company is represented by John Weaver, Commercial Trust Building.

The Lane Signal Accessories Co., Sayre, Pa., has been incorporated with a capital of $500,000 by William H. Lane, Harry S. Fish and Raymond L. Gebhardt, Sayre, to manufacture signal devices and other electrical and mechanical equipment.

Fire, July 1, destroyed a portion of the plant of the Read Machinery Co., Inc., York, Pa., with loss, including surrounding property, estimated in excess of $80,000.

Fire, July 5, destroyed the machine shop of the Charles H. Nadig Mfg. Co., 14-24 North Fourth Street, Allentown, Pa., with loss reported in excess of $40,000. The factory

is one and two-stories, 60 x 100 ft., with wing, 49 x 50 ft., occupied as a foundry. Charles H. Nadig is head of the company.

Chicago

CHICAGO, July 11.

Although neither the Illinois Central nor the Rock Island have yet bought against their lists, the latter road has issued an inquiry for two additional machines, a 36-in. x 36-in. x 12-ft. planer and a 26-in. shaper. The Chicago, Indianapolis & Louisville has asked for prices on a punch and shear. Buying remains at a low ebb, but inquiries from industrial companies are more numerous than for some time. The Automatic Electric Co., Chicago, is in the market for a two-spindle and a four-spindle plain-bearing drill press, 15-in. drill press, 20-in. wheel and lever feed drill press, No. 3 Niagara, or equivalent, inclinable power press No. 4 Niagara, or equivalent, inclinable power press, hand milling machine, motor-driven filing machine, an automatic tappng machine, a No. 42 and a No. 82 Niagara lever press, combination surface, disk and tool grinder, two Wells No. 140, or equivalent, hand screw machines, a Burke sensitive motor-driven drill, and a 2-ft. or 6-ft. brake. These machines are for delivery at the company's Fort Dodge, Iowa, plant. The Acme X-Ray Co., Chicago Avenue and Orleans Street, Chicago, has taken figures on the following machines: A 16-in. shaper, No. 2 milling machine, 14-in. x 6-ft. engine lathe, 20-in. drill press, an 11-in. speed lathe, hack saw, punch press, squaring shear and a gas tempering furnace. Of this list the shaper and the milling machine are understood to have been bought, used machines having been purchased. The Aerial Cutlery Mfg. Co., Marinette, Wis., is in the market for three polishing and buffing lathes, a balancing tool and a grinding wheel stand with protection hood.

The Federal vocational schools which are being started throughout the country by the Government are expected to result in machine tool business. Such a school has been established at Jacksonville, Ill., and one is contemplated at Valparaiso University, Valparaiso, Ind.

The prospective settlement of a definite wage scale for building mechanics has tended to increase building in Chicago. Permits were issued in June for 675 buildings involving a frontage of 18,510 ft. and a cost of $7,484,200, as compared with 428 permits, 11,076 ft. frontage and $2,967,750 for May, 1921, and 315 permits, 10,468 ft. of frontage and $6,836,900 for June, 1920.

The Hudson Battery Corporation, manufacturer of electrical supplies, 155 North Market Street, Chicago, has purchased from G. S. Blakeslee & Co., makers of dishwashing machines, a one-story plant, 115 x 234 ft., at 2856 Quinn Street, and will occupy the building.

The Curtis Leger Fixture Co., 1119 West Jackson Boulevard, Chicago, manufacturer of display fixtures, has purchased 300,000 sq. ft. of land on Eighteenth Street, extending from Forty-sixth Court to Forty-seventh Avenue. It will erect a series of one and two-story buildings when building conditions permit. These structures will be occupied by itself and its allied corporation, the National X-Ray Reflector Co., 235 West Jackson Boulevard. The first units to be constructed will cost $400,000.

The Universal Battery Co., 3410 South La Salle Street, Chicago, will occupy a one-story plant, 50 x 138 ft., 3419-25 Wentworth Avenue, the contract for the construction of which has been awarded.

E. J. Sekt, 64 West Randolph Street, Chicago, has been granted a permit to construct a one-story garage 150 x 173 ft., 1238-52 Morse Avenue, to cost $70,000.

The plant of the Mann Corporation, Bradley, Ill., has been purchased by M. C. Rosenbaum and Henry Borenstein, New York, who will utilize it in conjunction with an Eastern factory for the manufacture of ironing machines and other household appliances. The new owners are contemplating the erection of an assembling building at the Bradley plant this fall.

The Keith Furnace Co., care R. S. Keith, Court Avenue, Des Moines, Iowa, has taken bids on the construction of a one and two-story plant, to include a foundry, on East Twenty-sixth Street, near Dean Avenue, estimated to cost $150,000.

The Twin City Motor Bus Co., 344 North Exchange Street, St. Paul, Minn., has taken bids on the construction of a one-story garage and office building, 120 x 150 ft., to cost $40,000.

The Miller, Bryan, Pierce Co., 225 River Street, Aurora, Ill., manufacturer of typewriter supplies, is planning the construction of a three-story plant, 60 x 150 ft., to cost $160,000.

The Edward Valve & Mfg. Co., East Chicago, Ind., is completing plans for a new structure to replace the plant destroyed by fire several months ago. The new building will cost $400,000.

The Lewis Motor Mfg. Co., Chicago, care of Ralph C. Harris, architect, 190 North State Street, has plans under way for the erection of a new one and three-story plant at Peru and North Streets, Michigan City, Ind., to cost about $200,000 with machinery.

The Great Western Sand Blast Co., 833 South Oakley Boulevard, Chicago, has been chartered under State laws to manufacture sand blast equipment. The incorporators are Fred W. Turner and Frank Silverthorn.

Fire, July 1, destroyed a portion of the plant of the Paxton & Vierling Iron Works, Seventeenth Street, Omaha, Neb., with loss estimated at about $50,000.

The Gurney & Selleck Co., 122 Michigan Boulevard, Chicago, has been organized to manufacture furnaces and kindred equipment. It is headed by Theodore G. Selleck and Richard K. Gurney.

The Swing-a-Wing Mfg. Co., Madison, Minn., has been incorporated with a capital of $50,000 by Benjamin Schmaal, Frank B. and William B. Lessman, Madison, to manufacture gates, and other iron and steel products.

The American Wire Fabrics Co., Western Avenue and 136th Street, Blue Island, Chicago, has completed plans for a new one-story galvanizing plant, 45 x 145 ft., to be constructed in conjunction with a new warehouse and both structures are estimated to cost about $100,000. E. M. Newman, 80 West Washington Street, Chicago, is architect.

The St. Paul & Sault Ste. Marie Railway, St. Paul, Minn., has been granted permission to issue notes for $2,400,000, the proceeds to be used in connection with the purchase of new equipment, estimated to cost $3,303,685.

Baltimore

BALTIMORE, July 11.

Fire, June 30, destroyed the power house and pumping plant of the Dorchester Water Co., and the plant of the Cambridge Ice Co., Cambridge, Md., with loss estimated at about $70,000.

The Victor Piston Ring Co., 608 American Building, Baltimore, recently incorporated with a capital of $500,000 to manufacture, piston rings and other automotive products, is planning for the acquisition of an existing building for its proposed works, with adjoining property for expansion. Jackson Brandt is president and J. E. Butler, manager.

The Adamantex Brick Co. of Maryland, Baltimore, has been incorporated by officials of the Adamantex Brick Co., Brooklyn, N. Y., with capital of $1,000,000, for the establishment of a new plant at Arbutus, near Baltimore, to manufacture sand-cement bricks. The initial works will be equipped for a daily capacity of over 200,000 bricks, and will comprise 10 machines with auxiliary equipment. It is proposed to have the plant in service in about 60 days. Louis F. Ducker, president of the Brooklyn organization, will act in a similar capacity for the Baltimore subsidiary. Blum & Makover, Equitable Building, Baltimore, are corporate representatives.

The National Utensil Mfg. Co., 207 Guilford Avenue, Baltimore, has been incorporated with a capital of $125,000 to manufacture metalware, heating devices, etc. Henry L. Mendal is president and W. J. Demar, vice-president.

The Automatic Bearing Machine Co., Wilmington, Del., has been incorporated with a capital of $400,000 to manufacture machinery and tools. It is represented by Harry K. Hoch, Delaware Trust Building.

The Laurel Ice Co., Laurel, Del., has completed plans for a new ice-manufacturing and refrigerating plant, to be ready for service early in the fall.

The National Fibre & Insulation Co., Yorklyn, Del., has filed plans for the erection of a two-story addition, 140 x 160 ft. Warren Marshall is president.

The Darco Corporation, du Pont Building, Wilmington, Del., a subsidiary of the Atlas Powder Co., has disposed of a bond issue of $1,500,000, the proceeds to be used for a new carbon refining plant in Louisiana. A site is being selected in the northern part of the State, and initial machinery will provide for a capacity of 6000 tons per month. W. J. Webster is president of both companies.

The Board of Harbor Commissioners, Wilmington, Del., will install freight handling and conveying machinery and other equipment at the new docks and terminal to be constructed on the waterfront, bonds for which have been issued. Bids have been taken for the dock and warehouse construction, the lowest figure being received from the Hughes-Foulkrod Co., Commonwealth Building, Philadelphia, at $1,311,000. The available appropriation is $1,800,000.

The Common Council, Dover, Del., is having plans pre-

pared for the construction of a new municipal power plant. W. E. S. Dyer, Land Title Building, Philadelphia, is engineer.

The Grottoes Foundry & Machine Co., Grottoes, Va., has been incorporated with a capital of $25,000 to manufacture machinery, castings, etc. Charles M. Walker, Grottoes, is president, and Edward C. Martz, Harrisonburg, Va., secretary.

The Norfolk & Western Railway Co., Roanoke, Va., will receive bids up to 12 noon, July 20, for 18 steel coil engine truck springs; 200 bevel soft steel bars; 120 rods of wire fencing; 2500 steel angle bars, and 100,000 dating nails, with electrical material and apparatus. J. H. Clemmitt, Roanoke, is purchasing agent.

The Broadfoot Iron Works, Wilmington, N. C., is arranging to rebuild the main building at its plant, recently destroyed by fire.

Milwaukee

MILWAUKEE, July 11.

While tangible evidence of a revival in machine tool business is slow in development, nevertheless manufacturers in this market believe they are able to discern some improvement. The betterment is principally in inquiries, which were almost lifeless the latter part of May and during June. A small volume of orders is being received, but almost they invariably are for single machines. Production remains at a low point, as much of the business coming in can be filled promptly out of stock. Competition from used tools continues very strong, many of these being machines never set up for practical use, but despite their newness are available at a very great price advantage under new tools.

The Highway Trailer Co., Edgerton, Wis., sustained an estimated loss of $100,000 by fire of unknown origin which destroyed the main factory building and assembling floor, erected about 10 months ago. It was 188 x 950 ft., of brick and mill construction. Only a small part had been equipped, but this is a total loss. It is planned to start work on a new building as soon as insurance adjusters have completed their work. The original factory, now used mainly as a machine shop, was saved. James W. Menhall is president and general manager.

The Reliance Oil Burner Co. of Saukville, Wis., has been incorporated with a capital stock of $250,000 to manufacture heating devices using kerosene as fuel. The incorporators include Fred C. Keller and R. A. Sharp, officials of the Milwaukee Reliance Boiler Works, Milwaukee, and H. J. Cary, Saukville, Wis. The new concern takes over all of the assets and liabilities of the Ozaukee Heater Co. and the Ozaukee Sales Co., a subsidiary. The present plant will be continued in operation and later will be enlarged as demands require. Mr. Cary will remain in charge of the Saukville factory.

The Board of Education, Spooner, Wis., has engaged W. L. Alban, architect, St. Paul, Minn., to design a junior high and vocational training school, to be erected during the fall at an estimated cost of $100,000. W. C. Crocker is clerk of the board.

The Grant Furniture Co., 502-508 Sixth Street, Racine, Wis., will build a new three-story factory, 80 x 120 ft., of brick and mill construction, estimated to cost $65,000. The architect is D. R. Davis, Racine. Work will begin about July 20. Considerable wood-working machinery, with individual electric motor drive, will be required.

The Pelton Steel Co., 672 Kinnickinnic Avenue, Milwaukee, has disposed of its plant site, 300 x 720 ft., to the Milwaukee Electric Railway & Light Co., which requires the acreage for extensions of its car barns and shop adjoining the works. The transfer, however, will be made piecemeal and the operation of the foundry will not be affected for some time. The Pelton company intends to purchase a new site, probably in the West Milwaukee manufacturing district, and erect a new foundry between now and the time the Electric company finally takes possession. William H. Schuchardt is vice-president and general manager of the Pelton company.

The Dependable Baggage Co., Stanley, Wis., has started work on the reconstruction of its factory, which was gutted by fire March 3. The new building will be 100 ft. sq., of brick and mill construction, and will be equipped almost entirely with new machinery for manufacturing trunks, cases, luggage carriers, garment hangers and other wood specialties. J. F. Grubb is general manager.

The Hartenberger Double Wall Silo Co., Sheboygan Falls, Wis., has decided to relocate in the city of Sheyboygan, occupying a new factory on Calumet Drive recently erected by Alex Locke. It has increased its capital stock from $50,000 to $125,000 to accommodate the transfer and enlargement of the operation. Robert Hartenberger is president and general manager.

The Sunbeam Domestic Appliance Co., Milwaukee, manufacturer of electrically operated household devices, has moved into its new factory, containing 16,000 sq. ft. Oscar F. Fischedick, 1379 Richland Court, Shorewood, Milwaukee, is vice-president, treasurer and general manager.

The W. C. Dicke Motor Co., Manitowoc, Wis., has awarded contracts for a brick and concrete garage, 60 x 120 ft., with a basement, 45 x 60 ft., to be ready about Oct. 1. The machine and repair shop will occupy a space 38 x 75 ft. Equipment is now being purchased.

Morris Wald, president U. S. Radiator Co., 185 Fourth Street, Milwaukee, has engaged A. N. Strack, 693 Marshall Street, local, to design and erect a machine shop, 50 x 122 ft., two stories, on Twelfth, near Walnut Street, for general machine and automotive repairs and service. Work will start at once.

The Moloch Co., Kaukauna, Wis., manufacturer of automatic stoking devices, power hammers, etc., has completed the transfer of its operation to its new plant, erected at a cost of $200,000. The machine shop was moved early in June, and the foundry was transferred July 1, resuming operations July 5. Each building is 100 x 150 ft., of brick and steel. The Moloch Co. is a consolidation of the Kaukauna Machine Works Co. and the Moloch Stoker Co.

The Marathon Electric Mfg. Co., Wausau, Wis., manufacturer of small electric-motored appliances and devices, contemplates the erection of a one-story brick and steel addition, 40 x 180 ft., to be equipped as a machine shop, assembling floor, shipping room, offices, etc. The work is in charge of Oppenhamer & Obel, architects, Wausau.

The Co-Operative Axe & Tool Co., Chicago, with branch factory at Cleveland, is establishing a second branch plant at Green Bay, Wis. A lease has been taken of an existing three-story building, which will be equipped for machine work, manufacture of handles, etc. For the present the supply of forgings will be made under contract with the Green Bay Drive Calk Co., but later a forge shop and a steel refining plant will be added. The present installation includes polishing and electro-plating equipment, grinders, etc. E. D. Woods, general manager, will supervise the initial operations.

The Zwebell Brothers Co., 482 Milwaukee Street, Milwaukee, has let the general contract to the Northwestern Bridge & Iron Co., Milwaukee, for erecting a one-story brick and steel shop building, 60 x 110 ft., at Slinger, Wis., to manufacture vulcanizing machines, retreading devices, tire molds, and similar specialties. The architects are Judell & Bogner, Milwaukee.

The Board of Industrial Education, LaCrosse, Wis., will soon be in the market for miscellaneous equipment for the Longfellow vocational training institute, which is being remodeled and enlarged at a cost estimated at $50,000. Wells E. Bennett, local architect, is in charge.

Detroit

DETROIT, July 11.

Within the last year the machine tool market in the Detroit district has declined, one might say, from bucketfuls to thimble measures. Dealers are no longer in a position where they merely take orders, but instead they are "prospecting" for them, in all that the term implies. And before any selling can be done, considerable prospecting has to be done. A review of war-time expansion of both plant space and equipment offers little to cause optimism unless one looks beyond the immediate future.

It is probably true that a majority of plants in the city and State are equipped for future business needs during a period of at least five years, unless there comes another feverish demand for products such as characterized the last three or four years. Such a demand is not forecasted, and consequently dealers are becoming convined that the increase in business, which a short time ago was confidently looked forward to, will be very gradual and the needs for equipment remain moderate for a long time.

Whereas not long ago machines, such as turret lathes, drill presses and other bulky equipment, were sold in "squadrons," it is probable that during the next year, at least, they will be sold one at a time, here and there, and the field will have to be carefully canvassed. It is certain that wherever a machine is sold, the demand will be for every element of service that the manufacturer and dealer can give.

The demand to "deliver whatever you have that can be used on this job" now is changed to "look over my problem first and then deliver what I need to do this work most efficiently and at the lowest cost. If you can't solve my problem to the best possible advantage, I'll have to look elsewhere." This is an experience already widely met with by dealers and manufacturers selling machine tools to automotive parts industries.

When the automotive industry greatly increased the range of possibility in the machine tool field and demanded more specialization, owing to the keen competition for quantity production, the result was that specialization of machines was carried to great lengths and at great cost. Production engineers leaned toward special equipment that would make possible rapid production with the simplest possible operations.

Tools for these special machines were made in the tool rooms of the factories, as required, and as a result were extremely expensive. The expense of custom-built machinery and tools has been much greater than was realized.

But now the time has come when these items of expense must be closely examined. It is probable that automotive production engineers will turn around and demand less specialized machinery and tools, which may be had at less initial cost. Consequently it is probable that we will see machine manufacturers standardizing their products to some extent, at least in connection with the automotive field. The tool manufacturers will also discover a demand for a more standardized line of tools.

Whatever the type of demand that may develop the next year or so, there can be no doubt that manufacturers and dealers must look almost entirely to replacements for their business. It is certain that as much effort will have to be expended in selling one machine as was expended to sell a "flock" of them a short time ago.

According to one dealer in Detroit, the sale of machine tools the last three or four years has been twice as great as it would have been normally. He says that if he can sell during the next year or two 50 per cent of the number of machines sold in war time he will be selling 25 per cent more than he sold five or six years ago.

A great many of the smaller machine shops, which were turned exclusively to automotive parts production during the period of great demand, have been left high and dry by the falling off in the demand for automotive parts. Many of these are turning to other lines of production. This will create a demand for equipment changes, which should result in some business.

The brass-working industry in Detroit and Michigan is gaining. There is a field here for machine tool business that should become richer as time progresses. In fact, there are probably many such fields in Detroit and Michigan that have not yet been touched.

Meanwhile, dealers and manufacturers' agents are getting their organizations in shape, with particular regard to the increased sales engineering facilities which they will require in future, and are establishing service policies. It is observable that many dealers and agents are enlarging their stocks and equipment to make a good showing in the fight for business that is just beginning.

The Illinois Tool Works, Chicago, will soon start work on the construction of additional manufacturing units, duplicating the present plant, at Marysville, Mich. It has more than 100 men working at the Marysville works and the demand for its product is so brisk that various departments are operating day and night shifts. The company makes steering gears, oil pump spiral driven gears, oil pump vertical shaft assembly, speedometer drive pinions and gears, tools, jigs, fixtures and gages.

The Michigan Agricultural College, East Lansing, Mich., will erect a power plant, one story, 50 x 136 ft.

The Acme Chair Co., Reading, Mich., contemplates building a new factory with 80,000 ft. of floor space, and a 300-kw. power plant, at a cost of about $250,000, complete.

The Ann Arbor Mfg. Co., Ann Arbor, Mich., has been organized by Francis L. Lapointe, president, and David A. DeLong, secretary, with a capital stock of $10,000 to make automobile accessories and household specialties. Mr. Lapointe is also president of the American Broach & Machine Co.

The Utility Compressor Co., Adrian, Mich., has started construction of a new plant. It will have a frontage of 240 ft., with wing 70 ft. long paralleling the Wabash Railroad tracks.

The Ross Valve & Mfg. Co., Detroit, has been organized with a capitalization of $20,000 by C. A. Ross, 1263 West Grand Boulevard, C. C. Rosser and S. J. Cameron, to manufacture valves and other mechanical devices.

Bids will soon be asked by L. J. Heeman and F. G. Strauss, architects, 30½ West Pike Street, Pontiac, Mich., for a new one-story foundry, 40 x 50 ft., to cost about $30,000. The name of the owner will be announced at an early date.

The Dennis Wrench Co., Detroit, has been chartered under State laws to manufacture wrenches and tools, and operate a general machine works. The incorporators are Alva L. Dennis, 4081 Seyburn Avenue; A. L. Milham, and Harold E. Hotchkiss.

The Cheney Talking Machine Co., Grand Rapids, Mich., manufacturer of talking machines and now occupying a portion of the former plant of the Berkey & Gay Furniture Co., has tentative plans under consideration for a new plant on local site. No definite time has been fixed for the construction and the project is still in a preliminary stage.

The Regenerator Co., Detroit, has been chartered under State laws to manufacture carburetors, heating equipment, etc. The incorporators are Frank T. Armstrong, G. B. Sayre, and Robert D. Nesbitt, 607 Blaine Avenue.

The Angle Steel Stool Co., Otsego, Mich., is considering the erection of a new plant at Plainwell, Mich., and negotiations are under way for a local site. The initial unit, tentative plans for which have been prepared, will be 70 x 300 ft., and will provide for large increase over the present production. It is planned to remove the existing works to the new location.

Pittsburgh

PITTSBURGH, July 11.

The stagnation in the machinery market still is unbroken. Machine tool dealers report occasional sales of individual tools, usually out of stock and for quick delivery. There are no inquiries from the big steel companies in this district and, while there has been a material improvement in the financial standing of the railroads as a result of economies effected through the wholesale dropping of men and there is a likelihood of further savings from lower wage rates, it is generally expected that it will be at least a couple of months before the carriers will revive old inquiries. The Shepard Electric Crane & Hoist Co., through its Pittsburgh office, has secured a 5-ton monorail hoist and a 2-cu. yd. grab bucket monorail hoist for the Pittsburgh Screw & Bolt Co., and a 1-ton coal hoist for a Youngstown high school. The International Nickel Co. has awarded the Mesta Machine Co. seven gear drives for its new plant at Huntington, W. Va., and also has placed two tilting tables and three roll lathes, the latter with a Pittsburgh district manufacturer. The Duquesne Slag Products Co. is in the market for a 2-ton electric hoist with motor driven trolley. W. S. Read is purchasing agent for this company.

The Crane Co., 636 South Michigan Avenue, Chicago, manufacturer of pipe, fittings, steam specialties, etc., has awarded a contract to the Bates & Rogers Construction Co., 37 West Van Buren Street, for its new pipe and pipe-bending shop at Thirty-fourth Street and the Allegheny Valley Railroad, Pittsburgh, with new warehouse adjoining. It is said that the new plant will cost about $800,000.

Fire, July 3, destroyed the four-story, brick building at Fourth Avenue and Fancourt Street, Pittsburgh, occupied by the Electrical Mfg. & Repair Co., the Raylo Corporation and other industrial interests, with total loss estimated at $50,000.

The Wellsburg Refrigerating Co., Wellsburg, W. Va., has been incorporated with a capital of $25,000 by W. J. Harvey, J. O. Fisher and John R. Elson, Wellsburg, to manufacture refrigerating apparatus.

The Lovill-Dix Co., Mount Airy, W. Va., is arranging for the erection of a new cold storage and refrigerating plant.

The National Pump & Mfg. Co., Wheeling, W. Va., has been incorporated with a capital of $750,000 by John L. Kirkland and W. S. Romaine, Wheeling, to manufacture gasoline pumping equipment. The corporate agent is the Delaware Registration Co., Ford Building, Wilmington, Del.

The Cosmopolitan Mfg. Co., White Sulphur Springs, W. Va., recently organized with a capital of $25,000, will operate a local plant for the manufacture of spark plugs and will purchase steel and brass rods, wire and other products. G. P. Brown is president, and W. M. Sullivan, vice-president.

The Welch Automobile Co., Welch, W. Va., has awarded a contract to the King Lumber Co., Charlottesville, Va., for a new three-story service and repair building, estimated to cost about $50,000.

The Buckhannon Light & Water Co., Buckhannon, W. Va., will commence the erection of the superstructure for its new electric power plant at an early date. Leo Hudson, 808 Wabash Building, Pittsburgh, is engineer. Enoch Bellis is president.

Cleveland

CLEVELAND, July 11.

The McKinley School, Canton, Ohio, has issued an inquiry for about 25 machine tools and quite an assortment of small tools for machine shop equipment for the manual training department, and is also inquiring for complete equipment for a foundry, forge shop and electrical shop. Bids will be received July 29. An inquiry has come from Detroit for 40 to 50 automatic screw machines, but it is stated that the purchase is contingent on the placing of

a large pending order for automobile parts. With the exception of these inquiries the market is dull, although manufacturers of automatic screw machinery report an improvement in single tool inquiries. Sales by local dealers are limited to single tools. Several recent inquiries, involving numerous machines, have not yet resulted in orders. The Empire Rolling Mill Co., Cleveland, has an inquiry out for a 10-ton crane for its new galvanizing department. Among orders placed the past week was one for two 14-in. lathes for the Ohio State University, Columbus, and another for a No. 6 vertical milling machine, purchased by the Erie Stove & Mfg. Co., Erie, Pa.

The following are the principal items on a list issued by the McKinley School, Canton:

Four 14-in. engine lathes.
Seven 12 or 13-in. engine lathes.
One 16-in. plain shaper.
One 16-in. universal shaper.
One 3-in. radial drill.
One 10 x 30-in. cylindrical universal grinder.
One universal milling machine.
One vertical milling machine.
One universal tool room grinder.
One 20-in. upright drill.
One hacksaw.
One wet tool and drill grinder.
One large and one small arbor press.
One dry grinder.
One 2-ton elevating platform truck.
One portable floor hoist.

The Western Reserve Cotton Mills Co., Kent, Ohio, has had plans prepared by Lockwood, Green & Co., Hanna Building, Cleveland, for a three story mill for the manufacture of tire fabric. The project has been held up temporarily but it is expected that bids will be asked shortly. The estimated cost of the plant is about $300,000.

Stockholders of the Hydraulic Steel Co., Cleveland, upon recommendation of the directors, have rejected the plans proposing a merger with the Detroit Pressed Steel Co., Detroit. It was also decided to give up an option taken on the Detroit plant.

The Republic Electric Mfg. Co., 1820 East Eighteenth Street, Cleveland, has placed contract for the construction of a three-story factory and office building, 47 x 57 ft.

The City Council, New Philadelphia, Ohio, has decided to substitute electric for steam pumps at the municipal water works pumping station. City Engineer Arnold was instructed to prepare plans and estimates for the three pumps, each with a daily capacity of 750,000 gal.

Cincinnati

CINCINNATI, July 11.

Practically all of the larger machine tool manufacturing plants are closed. As most of these have made up sufficient stock to take care of needs, judged by the present rate of sales, for the next six months, it is expected that they will remain closed indefinitely. Skeleton forces of picked men are being maintained in the shops for experimental purposes and some greatly improved tools will be on the market within the next year. There has been very little activity the past week. None of the railroads at present are purchasing against their lists before the trade and a list from an aeroplane manufacturer involving approximately $60,000 worth of miscellaneous tools has been withdrawn for the time. A local frog and switch company purchased eight electric hoists the past week. Dealers report scattered orders for tools and a slight increase in inquiries.

The Venue Phonograph & Needle Co., Cincinnati, has been incorporated with a capitalization of $20,000 by Frank Herringer, Frank L. Gamble, W. G. Koch and Joseph W. Silver. While plans have not been completed, it expects to establish a local factory for the manufacture of phonographs and needles.

The Superior Oxy-Acetylene Machine Co., Hamilton, Ohio, has purchased a three-story building at the corner of South Seventh and Walnut streets. This was made in anticipation of future expansion, but will not be occupied at the present time. It is planned to make improvements to the present factory.

The plant of the Solar Metal Products Co., Columbus, Ohio, manufacturer of metal specialties, which has been merged with a Chicago concern, will continue in operation. The new company will be known as the Solar-Sturges Mfg. Co., with head offices in Chicago. C. R. LeSauvage is president and manager of the new concern.

The Clifton-Pratt Co., selling agent for foundry equipment and a general line of new and used machinery, 1224 West Eighth Street, Cincinnati, is in the market for the following used equipment: Two turbo-generator sets, three phase, 60 cycle, 440 volt; two 400-hp. Sterling water tube boilers; one 75-100 kw. unit, three phase, 60 cycle, 220 volt, direct connected to a Skinner, Ball or equal high speed engine; one 1000-hp. Cookson heater, steel buildings approximately 50 x 200-300 ft.

Indiana

INDIANAPOLIS, July 11.

The Pendergast Fence Co., Stillwater, Minn., has plans under way for a new one-story and basement factory on Division Street, Elkhart, Ind., estimated to cost about $25,000.

The American Generator Co., Poseyville, Ind., has been incorporated with a capital of $100,000 by E. D. Fletchall, O. E. Caudell and Valentine Bender, Poseyville, to manufacture electric equipment for lighting, heating and cooking. A branch of operation will be devoted to the manufacture of galvanized tanks and other metal equipment for farm service.

The Indiana Oil Refining Co., Columbus, Ind., will commence work at once on the superstructures for its new oil refinery on a site about three miles from the city. It will consist of five buildings, and with machinery is estimated to cost about $500,000. O. L. Bartlett is president.

The Charles A. Marks Mfg. Co., Elkhart, Ind., has been incorporated with a capital of $50,000 by Charles A. and John Marks and C. A. Thompson, Elkhart, to manufacture automobile equipment and other metal products.

The Mutual Ice & Coal Co., Columbus, Ind., recently organized, has plans under way for a new ice and cold storage plant to cost about $60,000. J. R. Dunlap is president and Courtney Moore, treasurer.

The Crown Fuel Saver Co., Richmond, Ind., has been incorporated with a capital of $50,000 by L. E. and A. H. Harter and J. W. Hansel, Richmond, to manufacture equipment and appliances for fuel saving.

The India Rubber Corporation, 310 West Ewing Street, South Bend, Ind., is completing plans for a two-story addition, estimated to cost about $50,000. W. W. Schneider, 120 South Main Street, is architect.

The Central South

ST. LOUIS, July 8.

The machine-tool business in this section is the quietest the trade has ever known. Most of the industries are closed and no new inquiries are out. The only hope lies in the railroad demand, and it is not known when that will manifest itself.

Fifty additional men were added on July 6 to the locomotive department of the Missouri Pacific shops at Sedalia, Mo.

The Scanlan & Haynes Piston Ring Co. 3001 LaSalle Street, St. Louis, has been organized by Daniel J. Scanlan, Jeremiah J. Hayes and Raymond J. Ambs, with a capital stock of $50,000 fully paid.

The Common Council, Marble Hill, Mo., has preliminary plans under way for the construction of a new municipal electric power plant, to cost about $50,000. C. Alexander, Lutesville, Mo., is in charge.

The Pennsylvania Tank Line, Third National Bank Building, St. Louis, is perfecting plans for an addition, to be equipped primarily for repairs to oil tank cars.

The Mayo Oil Service Co., Eleventh and Front streets, Ashland, Ky., is planning for the erection of a new local oil refinery. The company has recently been organized, with John C. C. Mayo as president and treasurer.

The Terrill Tire & Rubber Co., Clinton, Mo., is planning for the erection of a new two-story plant, 90 x 150 ft., estimated to cost about $65,000, including machinery.

The Curtis-Bentley Woodworking Co., Oklahoma City, Okla., has preliminary plans under way for the erection of buildings to replace its works recently destroyed by fire, with loss of about $500,000, including machinery. A new power house will be constructed.

The Universal Swinging Joint Mfg. Co., Chattanooga, Tenn., has plans under way for a new plant to manufacture flexible metallic pipe and pipe joints. The company was recently incorporated with a capital of $400,000. W. L. Mitchell and J. V. Brandon are heads.

The Farm Club Cold Storage Co., Clinton, Mo., recently organized, is planning for the erection of a new ice-manufacturing and refrigerating plant, estimated to cost about $50,000.

The Raines-Torstrick Co., Louisville, recently chartered, under State laws, will operate a local plant for the manufacture of automobile bodies, with department for general repair and rebuilding work. Verner V. Raines and Edward W. Torstrick, Louisville, head the company.

The Garfield Refining Co., Enid, Okla., has acquired

the properties of the Oil State Petroleum Co., the Penn-Oklahoma Oil Co., and the Healdton Oil Co., all operating in this district, with total acquisition valued at about $4,000,000. The new owner is planning for a number of improvements at the different refineries.

The Magnolia Petroleum Co., Duncan, Okla., has completed plans for the erection of two new one-story buildings at its refinery, 40 x 260 ft., and estimated to cost about $100,000 with equipment.

The Hermitage Marble Works, Nashville, Tenn., is planning for extensive development work in connection with quarrying operations. It has a tract of about 300 acres of coal lands. The installation will include grinding and crushing machinery, parts, etc. Lewis Butler is general manager.

The Missouri Farmers' Association, Kirksville, Mo., is planning for the erection of a series of new ice-making and cold storage plants. Two of the structures at Kirksville and Moberly, Mo., will be built at an early date.

The Missouri, Kansas & Texas Railroad Co., St. Louis, has plans under way for enlargements and improvements in its repair shops and engine houses at Houston, Fort Worth, Smithville and Waco, Tex. F. H. Ringer is chief engineer.

The Pacific Coast

SAN FRANCISCO, July 7.

The feature of the local market is an order being filled by a prominent interest for tools for shipment to New Zealand, involving mostly lathes and drilling machines. On the whole, there is a slightly better feeling in the trade, but the situation is by no means clarified yet. Movement of miscellaneous tools has been fair, and some prospects are in sight. The heavy supply of second-hand stock is still a serious obstacle to business in new machinery, and it is felt that the probable retirement of numerous small operators, by reason of insufficient business, will throw additional used materials on the market.

The Bethlehem Shipbuilding Co., San Fancisco, is arranging facilities at its local plant, as well as at the works at Alameda, Cal., for the manufacture of American-Diesel marine engines on a large scale. J. J. Tynan is general manager.

The Barley Motor Car Co., Kalamazoo, Mich., which makes Roamer cars, has purchased the business and equipment of the Roamer Motor Car Corporation, San Francisco, Cal., for a branch factory.

The B. H. Delay Aircraft Co., Venice, Cal., has been incorporated with a capital of $200,000 by B. H. and C. F. Delay, to manufacture aeroplanes and parts. It is represented by Francis Heney, 1009 Title Insurance Building, Los Angeles.

The S. P. Brick & Tile Co., Fresno, Cal., has been incorporated with a capital of $250,000 to manufacture brick, tile and similar products. A local plant will be established. The incorporators are H. W. Shields, Fresno; W. D. Trewhitt, Hanford, and L. E. Hayes, Exeter, Cal.

M. F. Marsh, Long Beach, Cal., has awarded a contract to Fred E. Tucker, 913 Olive Street, Long Beach, for a new one-story forge shop at 1322 Coronado Street.

The Owens Tire & Rubber Co., Euclid Avenue, Cleveland, is planning the erection of works at Los Angeles, estimated to cost close to $1,000,000. It is expected to give employment to more than 1000 men. Robert Owens is president of the company.

Fire, June 24, destroyed a large portion of the plant of the Swayne Lumber Co., Oroville, Cal., with loss estimated at close to $500,000, including machinery, etc.

The Anderson Ornamental Iron Works, 1143 San Pedro Street, Los Angeles, has filed notice of organization to manufacture iron products. Gustaf A. Anderson, 4516 Gramercy Place, heads the company.

Bagby & Mott, Modesto, Cal., operating an automobile service and machine repair works, are arranging for the immediate rebuilding of the plant, recently destroyed by fire, with loss of about $100,000, including equipment.

The California Wire Co., Orange, Cal., recently organized to manufacture electrical wires and cables, has plans under way for its new factory, one-story, 80 x 134 ft. Louis Koth, president of the company, is in charge.

The Gulf States

BIRMINGHAM, July 11.

The Texarkana Spring Bed Co., Texarkana, Tex., recently organized under State laws, will operate a local plant for the manufacture of bed springs and cots. R. L. Marshall, Dallas, Tex., is president, and L. A. Stewart, Texarkana, secretary and general manager.

The White Eagle Refining Co., Augusta, Kan., is considering the erection of a new refinery in the vicinity of Fort Worth, Tex. A site has been acquired.

The Knowlan Machine & Supply Co., Victoria, Tex., will erect two buildings each about 40 x 75 ft., instead of a single structure, as previously announced, and will remove its present works to the new location. Bids for the buildings, one of which will be equipped as a general machine works, have been received. Frank Knowlan is president and manager.

The Taft Packing Co., Taft, Tex., has completed plans for a new two-story fertilizer manufacturing plant, 65 x 115 ft., and power house. Construction will begin at an early date. H. S. Green, 415 Euclid Avenue, San Antonio, Tex., is architect.

The Reclamation Oil Co., Orange, Tex., has been incorporated with a capital of $2,000,000. Plans for a refinery have been prepared. J. E. Pike is president.

The Baton Rouge Electric Co., Baton Rouge, La., is planning for extensions and improvements in its electric plant and system to cost about $200,000. T. L. Small is manager.

B. A. Lewellen, Florence, Ala., is organizing a company to build a plant for the manufacture of automobile truck bodies. Preliminary plans are under way. The Chamber of Commerce is interested in the project.

The Bronson Mfg. Co., Bronson, Fla., has plans in preparation for the construction of a new electric light and power plant, and ice-manufacturing and cold storage plant. B. B. Stokes is secretary.

The Isthmus Co., Corpus Christi, Tex., has tentative plans under way for the construction of a new gasoline distillation plant, estimated to cost about $150,000 with machinery.

The American Motors Export Co., Jacksonville, Fla., has acquired about 30 acres of land for a new plant for the manufacture of automobiles and parts, to cost in excess of $150,000. Bids for the buildings will be taken at once. Henry L. Innes is president.

The Blue Ribbon Refineries, Box 295, Brownwood, Tex., are planning for the installation of new equipment at their plant, including filters, dryers and other apparatus. P. J. Baney is president.

The El Dorado Refining Co., El Dorado, Ark., is planning for the construction of a new oil refinery comprising two units, each with 1000 bbl. capacity per day. Later the refinery will be increased to a daily output of 5000 bbl. W. J. Brown is head.

Canada

TORONTO, July 11.

The Canadian machinery and machine tool market continues quiet. The demand for all classes of equipment is small and buyers are sending out inquiries only when in need of a single tool for some particular work. The railroads have been out of the market for some time and the makers of automobiles have also ceased to buy equipment. Even the demand for wood-working equipment, which was one of the main features of this market for a few months has dropped off. Second-hand equipment continues in better demand than new lines, but sales are small. Small tools are in fair demand and some good buying has recently been done. Prices continue unchanged.

J. D. Robertson, deputy minister, Department of Public Works, Calgary, Alta., is receiving bids for the construction of a power house to cost $150,000. R. F. Blakey, Parliament Buildings, Edmonton, Alta., is architect.

R. C. Desrochers, secretary Department of Public Works, Ottawa, Ont., will receive bids until July 22 for the supply and installation of an oil engine and generator in the power house at William Head, B. C.

The Standard Paper Box Co., 3 St. Paul Street East, Montreal, is building a factory to cost $200,000.

The lumber mill owned by the Robert Stewart Lumber Co., Wyndham Street, Guelph, Ont., was destroyed by fire with loss to machinery and building of $200,000. It will probably be rebuilt.

W. A. Galbraith, secretary Utilities Commission, Wingham, Ont., will receive bids until July 19, for one pumping unit; construction of pump house, etc.

The Municipal Council, Bagotville, Que., will build a hydroelectric plant to cost $30,000. L. P. Chayer is secretary.

Joseph Langevin, Coteau du Lac, Que., will build a power house and electric line to cost $20,000.

The plant of the Haileybury Brick & Tile Co., Haileybury, Ont., was destroyed by fire June 28, with a loss to building and equipment of $25,000.

Current Metal Prices

On Small Lots, Delivered from Merchants' Stocks, New York City

The quotations given below are for small lots, as sold from stores in New York City by merchants carrying stocks.

As there are many consumers whose requirements are not sufficiently heavy to warrant their placing orders with manufacturers for shipment in carload lots from mills, these prices are given for their convenience.

On a number of articles the base price only is given, it being impossible to name every size.

The wholesale prices at which large lots are sold by manufacturers for direct shipment from mills are given in the market reports appearing in a preceding part of THE IRON AGE under the general heading of "Iron and Steel Markets" and "Metal Markets."

Iron and Soft Steel Bars and Shapes

	Per Lb.
Bars:	
Refined bars, base price	2.93c.
Swedish bars, base price	12.00c.
Soft steel bars, base price	2.93c.
Hoops, base price	4.03c.
Bands, base price	3.63c.
Beams and channels, angles and tees 3 in. x ¼ in. and larger, base	3.03c.
Channels, angles and tees under 3 in. x ¼ in., base	2.93c.

Merchant Steel

	Per Lb.
Fire, 1½ x ½ in. and larger	2.93c.
(Smooth finish, 1 to 2½ x ¼ in. and larger)	3.13c.
Toe calk, ½ x ⅜ in. and larger	3.60c.
Cold-rolled strip, soft and quarter hard	10.00c. to 10.50c.
Open-hearth spring steel	4.25c. to 8.00c.
Shafting and Screw Stock:	
Rounds	4.38c. to 4.63c.
Squares, flats and hex	4.98c. to 5.13c.
Standard cast steel, base price	14.00c.
Extra cast steel	17.00c.
Special cast steel	22.00c.

Tank Plates—Steel

¼ in. and heavier	3.03c.

Sheets

Blue Annealed

	Per Lb.
No. 10	3.68c.
No. 12	3.73c.
No. 14	3.78c.
No. 16	3.88c.

Box Annealed—Black

	Soft Steel C. R., One Pass Per Lb.	Blued Stove Pipe Sheet Per Lb.
Nos. 18 to 20	4.30c.	.....
Nos. 22 and 24	4.35c.	5.60c.
No. 26	4.40c.	5.65c.
No. 28	4.50c.	5.75c.
No. 30	4.75c.	.....

No. 28, 36 in. wide, 10c. higher.

Galvanized

	Per Lb.
No. 14	4.50c.
No. 16	4.75c.
Nos. 18 and 20	4.90c.
Nos. 22 and 24	5.05c.
No. 26	5.20c.
No. 27	5.35c.
No. 28	5.50c.
No. 30	6.00c.

No. 28, 36 in. wide, 20c. higher.

Welded Pipe

Standard Steel	Blk.	Galv.	*Wrought Iron*	Blk.	Galv.
½ in. Butt...	—46	—30	¾ in. Butt...	—18	List
¾ in. Butt...	—52	—37	1-1½ in. Butt.	—20	— 2
1-3 in. Butt..	—54	—40	2 in. Lap	—14	+ 3
3½-6 in. Lap.	—49	—35	2½-6 in. Lap.	—18	— 2
7-12 in. Lap..	—40	—24	7-12 in. Lap..	— 7	+10

Steel Wire

BASED PRICE* ON NO. 9 GAGE AND COARSER	Per Lb.
Bright basic	4.50c.
Annealed soft	4.50c.
Galvanized annealed	5.25c.
Coppered basic	5.00c.
Tinned soft Bessemer	6.50c.

*Regular extras for lighter gages.

Brass Sheet, Rod, Tube and Wire

BASE PRICE

High brass sheet	15¾c. to 18¾c.
High brass wire	16¾c. to 21¼c.
Brass rod	13¾c. to 20¼c.
Brass tube, brazed	27 c. to 31 c.
Brass tube, seamless	19 c. to 20 c.
Copper tube, seamless	22¼c. to 23 c.

Copper Sheets

Sheet copper, hot rolled, 24 oz., 21¾c. to 23¾c. per lb. base.

Cold rolled, 14 oz. and heavier, 2c. per lb. advance over hot rolled.

Tin Plates

Bright Tin		Coke—14x20		
			Primes	Wasters
Grade "AAA" Charcoal 14x20	Grade "A" Charcoal 14x20	80 lb....	$6.80	$6.55
		90 lb....	6.90	6.65
		100 lb....	7.00	6.75
IC..	$10.60	$9.50	IC...	7.20	6.95
IX..	11.80	10.75	IX...	8.10	7.85
IXX..	13.60	12.25	IXX...	9.10	8.85
IXXX..	15.60	14.25	IXXX...	10.50	10.25
IXXXX..	17.20	16.00	IXXXX...	11.50	11.25

Terne Plates

8-lb. Coating 14 x 20

100 lb.	$7.50
IC	7.75
IX	8.00
Fire door stock	11.00

Tin

Straits pig	32c.
Bar	38c. to 40c.

Copper

Lake ingot	16c.
Electrolytic	16c.
Casting	16c.

Spelter and Sheet Zinc

Western spelter	6¼c. to 6½c.
Sheet zinc, No. 9 base, casks	11½c. open 12c.

Lead and Solder*

American pig lead	5½c.
Bar lead	6¼c. to 6¾c.
Solder, ½ and ½ guaranteed	24c.
No. 1 solder	21c.
Refined solder	18c.

*Prices of solder indicated by private brand vary according to composition.

Babbitt Metal

Best grade, per lb.	80c.
Commercial grade, per lb.	40c.
Grade D, per lb.	35c.

Antimony

Asiatic	6½c. to 7c.

Aluminum

No. 1 aluminum (guaranteed over 99 per cent pure), in ingots for remelting, per lb.... 30c. to 33c.

Old Metals

Conditions are generally unchanged, business being practically nil. Values are unchanged. Dealers' buying prices are nominally as follows:

	Cents Per Lb.
Copper, heavy and crucible	10.00
Copper, heavy and wire	9.25
Copper, light and bottoms	8.00
Brass, heavy	4.75
Brass, light	4.00
Heavy machine composition	8.50
No. 1 yellow brass turnings	4.25
No. 1 red brass or composition turnings	6.50
Lead, heavy	3.50
Lead, tea	2.25
Zinc	2.50